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COMMONWEALTH BUREAU OF ANIMAL HEALTH

THE
VETERINARY BULLETIN

Vol. 27] September, 1957 [No. 9

DISEASES CAUSED BY BACTERIA AND FUNGI

NAI, D. D. & VALLIS, P. (1956). Inchiesta sulla diffusione della mastite bovina da "Streptococcus agalactiae" in Italia. **[Survey of the incidence of *Streptococcus agalactiae* mastitis of cows in Italy.]**—*Arch. Vet. Ital.* **7,** 501-518. [English, French, German and Spanish summaries.] **2574**

Milk samples from 783 herds (comprising 10,405 cows) in Italy were examined. Infection was confirmed in 340 herds, comprising 3,337 animals, and was highest in the Lombardy and Latium regions (55·2 and 49·8% respectively) where the animals are in large herds, permanently housed under conditions of intensive production. It was observed that incidence increased with the age of the animals and all the 4 quarters were equally susceptible. It is considered that climatic and geographical conditions do not play an important part in the epidemiology of the disease.—T.E.G.R.

NAI, D. D. & NEGRETTI, F. (1956). Ricerche sperimentali intorno alla diagnosi dello "Streptococcus agalactiae" mediante la prova di agglutinazione rapida. **[The rapid agglutination test for the diagnosis of *Streptococcus agalactiae* in milk.]**—*Arch. Vet. Ital.* **7,** 519-528. [English, French, German and Spanish summaries.] **2575**

The rapid slide agglutination test was carried out with 2,000 strains of *Str. agalactiae* of which 1,000 were isolated on the medium described by Wilson & Slavin [*V.B.* **21,** 1872] and incubated at 37° C. for 24 hours and the other 1,000 were isolated on the same medium plus 2% glycerol and incubated at 30°C. for 24 hours. The diagnostic serum consisted of a mixture of the 16 type-specific sera and normal rabbit serum was used as control. Results were read after 1 min. In those isolated by the first method auto-agglutination was observed in 42% and results with the remaining 58% were in agreement with those of the spot test. In those isolated by the second method auto-agglutination occurred in 5·5% and there was agreement with the results of the spot test.—T.E.G.R.

NEGRETTI, F. & LANGÉ, E. (1956). Studio delle caratteristiche sierologiche dei ceppi di "Streptococcus agalactiae" isolati in Italia. **[Serological characteristics of strains of *Streptococcus agalactiae* isolated in Italy.]**—*Arch. Vet. Ital.* **7,** 529-538. [English, French, German and Spanish summaries.] **2576**

Of 1,143 strains of *Str. agalactiae* isolated from the various regions of Italy the following 14 serological sub-types, in order of frequency, were identified: 1b (411), 7a (130), 6a (104), 1e (82), 1c (75), 3a (71), 2a (63), 4b (49), 1a (38), 1f (32), 3e (29), 3b (19), 3c (7). There were also 10 strains serologically similar to the "Pat S 5" strain, not yet classified. There was no difference in the geographical distribution of the various serological types. It was also observed that several types may be concerned in infection of the same quarter.—T.E.G.R.

PETRILLO, R. L. (1956). Ricerche sulla terapia della mastite bovina da "Streptococcus agalactiae". I. La terapia con penicillina. **[Treatment of *Streptococcus agalactiae* mastitis of cows. I. Penicillin.]**—*Arch. Vet. Ital.* **7,** 539-568. [English, French and Spanish summaries.] **2577**

PETRILLO, R. L. & VALLIS, P. (1956). Ricerche sulla terapia della mastite bovina da "Streptococcus agalactiae". II. Tentativi di cura dei casi ribelli. **[Treatment of *Streptococcus agalactiae* mastitis of cows. II. Obstinate cases.]**—*Ibid.* 569-578. [English, French and Spanish summaries.] **2578**

PETRILLO, R. L. (1956). Ricerche sulla terapia della mastite bovina da "Streptococcus agalactiae". III. Chemioterapia di-guanidinica. **[Treatment of *Str. agalactiae* mastitis**

of cows. III. Di-Guanidine [chlorhexidine].] —*Ibid.* 579-594. [English, French and German summaries.] **2579**

I. Systematic studies of the efficacy of pencillin in 5,000 quarters infected with *Str. agalactiae* yielded the following results in terms of percentage recoveries: (1) In previously untreated quarters without clinical changes: One infusion of 0·1 megaunit as oily suspension in aluminium monostearate: about 67%; where repeated 8 days later: about 90%. One infusion of the same dose in the form of plain penicillin: 68·6% (oily), but only 48·5% (aqueous); where these were repeated after 3 days: 83·5% (oily) and 55% (aqueous). (2) In previously untreated clinical quarters: 0·1 megaunit in oily suspension, repeated after 8 days: 54–60%, much better than the same treatment with aqueous solution. One megaunit in oily suspension by intraparenchymal injection: 85·2%. (3) In refractory quarters with or without clinical changes: 50–71% with 1 or 2 infusions of 0·3–0·4 megaunit, and 5–20% better where intraparenchymal injection was used. Doses lower than 0·1 megaunit were not used in any of the cases. About 10% of penicillin-treated quarters become completely resistant to further treatment.

II. Attempts to sterilize a total of 350 quarters, which had proved refractory to penicillin and other drugs yielded recovery rates of 65–71%, either with infusions of 0·4 megaunit of penicillin as oily suspension in aluminium monostearate, intraparenchymal injections of 0·5–2 megaunits of procaine penicillin, or with chloramphenicol 120 mg. plus streptomycin 60 mg. plus trypsin 75 mg., in infections with no clinical changes. In the presence of clinical changes, all these treatments—except plain penicillin infusions—proved about equally effective (47–52% recoveries). When either of the penicillin treatments was combined with ultrasonic wave therapy, the results were better (62%).

III. Chlorhexidine ("Hibitane") was tested for possible toxic effects on the epithelium of the cow's udder and for its therapeutic efficacy against *Str. agalactiae* mastitis. Intramammary infusion of 0·5 g. of active agent in oily suspension proved harmless in both lactating and dry cows, even where repeated after 3 days. Doses of twice that amount or more sometimes produced an inflammatory reaction, which was always transient in lactating cows, but could be more serious, in dry cows, whenever an aqueous solution was used instead of the oily suspension.

Therapeutic tests, both in previously untreated and in refractory quarters, showed that the results of chlorhexidine treatment are not materially affected by the size of the dose, when 2 oily infusions are given with a 3-day interval (0·5 plus 0·5 g., 1 plus 0·5 g., 1 plus 1 g.). With the lowest of these dosages 82·4% of the quarters without clinical changes and 55·1% of the clinical quarters recovered.—G. P. Marshall.

Defranceschi, L. & Nani, S. (1956). Il comportamento dei costituenti chimici del latte nella mastite bovina da "Streptococcus agalactiae". I. L'azoto totale e il fosforo. **[Chemical composition of milk in bovine mastitis caused by *Str. agalactiae*. I. Nitrogen and phosphorus.]**—*Arch. Vet. Ital.* **7,** 595-608. [English, French, German and Spanish summaries.] **2580**

There was an increase in the total nitrogen of known infected milk samples with a positive cell count (over 500,000 cells/ml.) and, to a less extent, in milk from quarters with fibrous nodules. Changes in the total phosphorus and its fractions were not constant. The total nitrogen : total phosphorus ratio varied directly with the total nitrogen.—T.E.G.R.

Wright, G. G. & Puziss, M. (1957). **Elaboration of protective antigen of *Bacillus anthracis* under anaerobic conditions.**—*Nature, Lond.* **179,** 916-917. **2581**

Cultures were grown aerobically and anaerobically on a medium described by Puziss & Wright modified by: addition of adenosine, glycine and *l*-alanine; reduction in the conc. of ferrous sulphate; and omission of cysteine. The inoculum consisted of 500 spores per ml. of medium. The cultures were adjusted to pH8 and filtered; the filtrate was freeze-dried and reconstituted in water at 3 times the original conc. and injected into groups of 4 g. pigs in doses of 0·5 or 0·1 ml. Each animal was given 5 injections on alternate days followed, 7 days later, by a challenge dose of 1,000 spores (200 LD_{50} approx.). The animals were examined daily for 14 days after challenge. Under anaerobic conditions growth was somewhat slower but antigen production was at least equal to that under aerobic conditions. It is considered that the anaerobic culture method will simplify large-scale production of antigen.—T.E.G.R.

Orlandella, V. & Biondi, E. (1957). Ricerche comparative sull'azione di alcuni sali di ammonio quaternario sulle spore del *B. anthracis*. **[Comparative effect of some quaternary ammonium compounds on**

anthrax spores.]—*Zooprofilassi* **12,** 21-38. [English and French summaries.] **2582**

The compounds tested did not kill *B. anthracis* spores.—T.E.G.R.

PATNODE, R. A. & HUDGINS, P. C. (1957). **Tuberculostatic effect of calf lung fatty acids on human and bovine tubercle bacilli.**—*Amer. Rev. Tuberc.* **75,** 630-637. [French and Spanish summaries. English summary slightly modified.] **2583**

An attempt was made to determine the mechanism underlying the resistance of cattle to human tubercle bacilli and their susceptibility to bovine bacilli. Free fatty acids and phospholipid fatty acids prepared from calf lung by standard chemical procedures were tuberculostatic *in vitro,* but slightly more so for human (H37Rv) than for bovine (Ravenel) bacilli. The results of further chemical studies of the phospholipid fatty acids suggested that palmitic acid was the active component.

KONNO, K., KURZMANN, R. & BIRD, K. T. (1957). **The metabolism of nicotinic acid in mycobacteria. A method for differentiating tubercle bacilli of human origin from other mycobacteria.** — *Amer. Rev. Tuberc.* **75,** 529-537. [French and Spanish summaries. Abst. from English summary.] **2584**

There was a striking difference in the nicotinic acid synthesis between human and other types of mycobacteria. Human tubercle bacilli produced more than 13·5 μg. per ml. of culture filtrate, or 6·3μg per mg. of dry bacillary weight, while the other mycobacteria, including bovine tubercle bacilli, did not exceed 2 μg. per ml., or 1μg. per mg. of dry bacillary weight. Of the two types of tubercle bacilli which are pathogenic for man, the bovine type is far less capable of producing nicotinic acid. There was no difference in the nicotinic acid production between virulent and attenuated bacilli of human or bovine origin.

I. SIMINOFF, P., SMITH, R. M., SOKOLSKI, W. T. & SAVAGE, G. M. (1957). **Streptovaricin. I. Discovery and biological activity.**—*Amer. Rev. Tuberc.* **75,** 576-583. [French and Spanish summaries.] **2585**

II. RHULAND, L. E., STERN, K. F. & REAMES, H. R. (1957). **Streptovaricin. III.** ***In vivo*** **studies in the tuberculous mouse.**—*Ibid.* 588-593. [French and Spanish summaries. English summaries modified.] **2586**

I. A new antibiotic complex, streptovaricin, produced by *Streptomyces spectabilis,* n. sp., consists of at least 5 microbiologically active, closely related components which have been named streptovaricins A, B, C, D, and E, respectively. These components may be differentiated by paper chromatography. The complex and its components are active *in vitro* primarily against *M. tuberculosis* and Gram-positive bacteria, although several Gram-negative bacteria are susceptible. Streptovaricin does not give rise to cross resistance to streptomycin, or to any other commonly used antibiotic. Susceptible bacteria develop increased resistance to streptovaricin after exposure. Some of the factors concerned with this increased resistance were studied.

II. Streptovaricin was highly effective in tuberculous mice, components B and C having good activity *in vivo. M. tuberculosis* (H37Rv) did not develop resistance *in vivo* over an 84-day period, and strains that were resistant *in vitro* had an attenuated virulence for mice.

SEELEMANN, M. & BUSCHKIEL, H. (1957). Chemoprophylaktische Versuche bei Rindertuberkulose. II. Versuche unter praktischen Verhältnissen in tuberkuloseverseuchten Herden. **[Chemoprophylactic experiments in bovine TB. II. Experiments under practical conditions in tuberculous herds.]**—*Zbl. VetMed.* **4,** 101-118. [English, French and Spanish summaries. Abst. from English summary.] **2587**

With the help of regular prophylactic doses of "Ferroteben" [See *V.B.* **27,** 1959] it was possible, in two herds extensively affected with TB., to protect yearling and two-year-old heifer calves in contact with infected animals. Bull calves serving as controls showed tuberculous reactions of varying degree at different intervals after exposure. Heifer calves were protected in two other herds, in which the positive and negative animals were segregated, whereas several bull calves developed TB. In addition, a number of youngstock which did not receive the drug but were confined to the non-reacting group developed a reaction to tuberculin.

This method of prevention is not suitable for continued use in herds where eradication is in progress, but can be used in such herds for a period of 1–2 years, where the calf crop is particularly exposed to infection. [The possible danger of production of drug-fast strains of tubercle bacilli is not discussed].

KÁTÓ, L. & GÖZSY, B. (1957). **Studies on the effects of phagocytic stimulation on microbial disease. VII. A preliminary experi-**

mental approach to an understanding of the correlation between tuberculin hypersensitivity, the functional activity of the reticulo-endothelial system, and tuberculous lesions in guinea pigs.—*Canad. J. Microbiol.* **3**, 61-71. **2588**

Experimental TB. in g. pigs was shown to be influenced beneficially by treatment with BD.I (1, 4 - dimethyl - 7 - isopropyl - bicyclo - decapentane). The tuberculin reactions in BD.I treated animals, whether normal or immunized with B.C.G. were markedly milder than in the untreated. In the treated animals the average volume of erythema and induration was much smaller, and central necrosis was either absent or smaller in area than in untreated animals. Tuberculous lesions in BD.I treated, normal control, and immunized g. pigs were less severe than those in untreated groups of animals when examined P.M. at 6, 8 and 12 weeks after superinfection with the bovine (Ravenel) strain of *M. tuberculosis*. The authors do not consider that the drug interferes with the immune principle. They attribute its effect to stimulation of the cellular defence mechanism. Rabbits tolerated BD.I injections well.—J. Ciplijauskaite.

Anon. (1955). **Experimental studies of vaccination, allergy, and immunity in tuberculosis. VI. Comparative effects of BCG, H37Ra, *Mycobacterium phlei* and a wax-protein fraction of human tubercle bacilli.**—*Amer. J. Hyg.* **62**, 270-282. **2589**

Tests were carried out on g. pigs with: BCG, H37Ra, *M. phlei* (0.075 mg./ml. and 7·5 mg./ml.), a lipopolysaccharide-protein complex extracted from the human strain Brévannes (0·1 mg./ml. and 10 mg./ml. suspended in light liquid paraffin). The intradermal tuberculin test with 0·005 mg. (250 TU) PPD-S was applied before and 32 days after vaccination and the vaccine lesions were examined at 4, 7, 14 and 27 days. The animals were challenged, 35 days after vaccination, with 0·5 ml. H37Rv (about $2{\cdot}5\times10^6$ organisms) intraperitoneally. *M. phlei* produced neither allergy nor resistance. The wax protein vaccine produced a low but significant degree of allergy and a slightly higher resistance than that of untreated controls. BCG and H37Ra set up marked allergy and significantly stronger resistance. The nodule at the site of injection of *M. phlei* reached its maximum size at 4 days, then decreased rapidly and at 1 month was considerably smaller than the nodules at the site of inj. of BCG or H37Ra; that at the site of inj. of wax-protein vaccine was the largest. It is concluded that the allergenic and immunogenic properties of the vaccines are closely associated and the size of the nodule at the site of injection is not indicative of the immunity conferred. The results and their possible applicability are discussed.
—T.E.G.R.

I. Francis, J. (1957). **The virulence and toxicity of mycobacteria for a variety of species.**—*Acta tuberc. scand.* **33**, 93-102. [In English.] **2590**

II. Francis, J. (1957). **The effect of streptomycin, dapsone, PAS, and thiosemicarbazones on experimental bronchogenic tuberculosis of dogs.**—*Ibid.* 103-119. **2591**

I. F. discussed the virulence of freshly isolated and lab. strains of tubercle bacilli. The chick embryo, mouse and rat developed little tuberculous allergy. Human and bovine tubercle bacilli were very toxic for the cells of these species, but avian bacilli, *M. johnei, M. ulcerans* and rat-leprosy bacilli produced a picture of apparently healthy cells filled with bacilli. Vole bacilli were only slightly more toxic.

II. Pulmonary TB. could be set up in dogs by the intratracheal inj. of massive doses of tubercle bacilli [see also *V.B.* **26**, 3079]. This type of infection was suitable for the testing of tuberculostatic drugs, because it resembled human pulmonary TB. more closely than infection in other animals. F. did not propose the treatment of clinical TB. in dogs with these drugs.—R.M.

Yamane, I. (1957). **Growth-enhancing factor for human tubercle bacilli using minute inocula.**—*J. Bact.* **73**, 334-337. [Author's summary slightly modified.] **2592**

A crystalline growth-enhancing factor for human tubercle bacilli was isolated from egg yolk. It was heat stable, soluble in ether and in chloroform, and insoluble in water. It was required in concentrations above 0·01%. Using this material, a thermostable synthetic agar medium could be devised for the detection of tubercle bacilli.

Soltys, M. A. & Spratling, F. R. (1957). **Infectious cystitis and pyelonephritis of pigs: a preliminary communication.**—*Vet. Rec.* **69**, 500-504. [Authors' summary modified.] **2593**

An infection of the urinary tract in pigs is described. The most characteristic clinical sign was the frequent passage of turbid, blood-stained urine. Cystitis occurred in 5, and pyelonephritis in 2 of the 6 pigs. An anaerobic diphtheroid bacterium was isolated, for which the name *Corynebacterium suis* is suggested.

SUTMŐLLER, P., KRANEVELD, F. C. & VAN DER SHAAF, A. (1957). **Melioidosis (pseudomalleus) in sheep, goats, and pigs on Aruba (Netherland Antilles).**—*J. Amer. vet. med. Ass.* **130,** 415-417. [Authors' summary modified.] **2594**

Melioidosis is common in sheep and goats in Aruba, Netherland Antilles (in the Caribbean) and may also occur in pigs. The disease manifests itself by chronic abscesses in viscera, joints, and lymph nodes. The causative agent *Pfeifferella whitmori*) was identified by cultural, pathological, and serological tests.

TOMESCU, V., POPESCU, A., JITARU, N. & ŢIBREA, S. (1956). Incercări de preparare a serului antirujetic prin hiperimunizarea bovinelor cu cîte o singură tulpină de B. rujetului de tip A, B sau N. [**Preparation of swine erysipelas serum by hyperimmunizing cattle with a single strain of type A, B or N.**] —*Anu. Inst. Seruri Vaccin. Pasteur, Bucuresti* **1,** 165-173. [In Roumanian. French, German and Russian summaries. Abst. from French summary.] **2595**

Hyperimmunization of cattle with a single strain of *E. rhusiopathiae* yielded serum comparable to that from animals hyperimmunized with a mixture of strains. The titres of sera obtained with strains of Type B were superior to those obtained with Type A and particularly Type N. Basic immunity played an important role: multiple injections of Type B strains would not produce satisfactory hyperimmune sera if animals had previously received weak strains of Types A or N. Titration of sera in mice gave more constant results than in pigeons. Titration of sera in lab. animals was not an entirely reliable method of judging their protective value for pigs.—M.G.G.

COOPER, M. S., PERSONEUS, G. R. & PERCIVAL, R. C. (1957). **Laboratory studies on erysipelas. IV. Duration of immunity in turkeys vaccinated with an adsorbed bacterin.**—*Poult. Sci.* **36,** 266-269. [Authors' summary modified.] **2596**

Although the minimum effective dose of an experimental *E. rhusiopathiae* killed vaccine was less than 0·032 ml. in turkeys, 2 and 4 ml. of a similar commercial product conferred a significantly longer immunity than 0·5 ml.

MALEWITZ, T. D., GRAY, M. L. & SMITH, E. M. (1957). **Experimentally induced listeriosis in turkey poults.**—*Poult. Sci.* **36,** 416-419. [Authors' summary modified.] **2597**

The authors described the symptoms and the gross and microscopic lesions in 5 turkey poults, 3 to 11 days old, inoculated i/p with a standardized suspension of *Erysipelothrix* (*Listeria*) *monocytogenes*. The organism was recovered from the heart, liver and brain of four of the five inoculated birds.

FERNANDES GOMES, J. & NUNES PEREIRA, J. L. (1956). Pleuropneumonias em bovinos açorianos. [**Pleuropneumonia in cattle in the Azores.**]—*Bol. pecuar.* **24,** 49-62. **2598**

Lesions of pleuropneumonia were observed in the apical and cardiac lobes of the lungs of cattle imported into Portugal from the Azores. *Pasteurella boviseptica* and *Escherichia aerobacter* were isolated from the affected tissue. It is considered that the condition was: pleuropneumonia caused by *Past. boviseptica* (shipping fever) or by saprophytic or other pathogenic organisms; or inhalation pneumonia. —T.E.G.R.

STRICKER, F. & GRUNERT, Z. (1956). Pasteurella haemolytica ako pôvodca septikemického ochorenia oviec. [*Pasteurella haemolytica* **as the cause of a septicaemic disease in sheep.**] —*Vet. Čas.* **5,** 435-440. [In Slovak. German and Russian summaries.] **2599**

Outbreaks of *Past. haemolytica* septicaemia occurred in 3 flocks in late winter–early spring, affecting mostly ewes but also lambs. In all three instances the disease ceased suddenly when animals were put on pasture and nutritional conditions improved. In the early stages the infection responded to treatment with penicillin. *In vitro, Past. haemolytica* was resistant to streptomycin.—E.G.

AIRAPETYAN, V. G. (1955). [**Vaccination of animals against pasteurellosis with formol saponin vaccine.**]—*Trud. armyan. nauchno-issled. vet. Inst.* **8,** pp. 11-15. [In Russian.] **2600**

An account of large-scale field trials with this vaccine, which had yielded promising results in tests in lab. animals. On 13 collective farms in the Ararat district, known to be infected, 2,658 cattle and buffaloes were each given 2 inoculations (3 ml. followed after 15 days by 5 ml.). There was a slight rise of body temp. (0·5° to 1°C.) with dulness and inappetence after vaccination, and return to normal usually in 24 hours. Very occasional severe reaction was apparently due to individual sensitivity to saponin. During the two years after vaccination no cases of pasteurella infection occurred among the vaccinated animals. Calves and their dams were not vaccinated.—S. TERLECKI.

BELLANI, L. (1956). Sulla mastite acuta parenchimatosa. Detta anche mastite da coli. [**Acute bovine** (*E. coli*) **mastitis.**]—*Profilassi* **29,** 59-69. **2601**

Of 25 cases of mastitis in cattle, from which *E. coli* was isolated, 1 was of the "ephemeral" type, lasting 24–36 hours; 4 were mild, lasting 3–4 days; 19 were severe; and 1 severe case was complicated by paraplegia. Treatment, for which good results are claimed, consisted of streptomycin and mepyramine maleate ("Neoantergan"), both administered by the intramammary route after "stripping" the udder, in mild cases. In severe cases treatment was supplemented by sulphonamides i/v, antihistamines i/m and 10% glucose soln. s/c.—T.E.G.R.

LÖLIGER, H. -C. (1956). Experimentelle Coli-Orchitis beim Ziegenbock. [**Experimental** *E. coli* **orchitis in the goat.**]—*Arch. exp. VetMed.* **10,** 582-590. **2602**

Broth culture of a strain of *E. coli* isolated from the ejaculate of a goat, was injected in doses of 0·5 ml. into the right testicle of two, and the right epididymis of two other six-month-old goats. One animal of each group died. Semen samples from the survivors contained polymorphonuclear leucocytes, plasma cells and giant spermatid cells. There was malformation and agglutination of spermatozoa. Motility was inhibited. *E. coli* was not found in the semen of the goat which had been infected intratesticularly, but was present in the ejaculate of the other. On P.M. examination 21 days after infection, there was necrotizing, purulent orchitis in the goat infected intratesticularly and epididymitis with abscess formation in the other, in which there were also granulomata in the cauda epididymis of the non-infected left testicle, histologically resembling lesions seen in goats with congestion of semen [*V.B.* **23,** 1755 & 2112].
—E.G.

BAUMGÄRTEL, T. (1957). Der Einfluss des Streptomycins auf die Coli-Flora. [**Effect of streptomycin on the** *E. coli* **flora.**]—*Arzneimittelforsch.* **7,** 103-106. [English summary.] **2603**

Typical *E. coli commune* was sensitive to streptomycin. It rapidly acquired a strong hereditary resistance by contact with 10 g./ml. of the antibiotic, by single-stage mutation. A gradual resistance developed in the saccharose-fermenting variants *communior* and *neapolitanum.* The factor responsible for resistance was present in deoxyribonucleic acid extracts (obtained by extraction with deoxycholic acid); by means of these extracts, resistance could be transferred to susceptible strains.—R.M.

DE ALMEIDA CHRISTOVAC, D. (1957). **Enhancement of pathogenicity of Enterobacteriaceae for mice by wetting agents.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 724-725. [Author's summary modified.] **2604**

Two wetting agents, Deceresol-OT and Duponol W.A., when added to suspensions of *Shigella dysenteriae, Sh. paradysenteriae, Salmonella typhi* or *Sh. ambigua,* consistently enhanced the pathogenicity of the organisms for mice inoculated intraperitoneally.

SARANTSEV, A. A. (1956). [**Prophylactic qualities of milk from cows hyperimmunized with** *Salmonella enteritidis* **antigen.**] —*Trud. saratov. zoo.-vet. Inst.* **6,** 51-54. [In Russian.] **2605**

The agglutinin titre of whey from cows hyperimmunized with *S. enteritidis* antigen paralleled, but lagged behind, that of serum. Plate agglutination tests gave uniform results with whey or serum at titres of 1 : 800 or above; at titres of 1 : 200 or below the results were less reliable. While milk from hyperimmunized cows possessed prophylactic properties in experiments with g. pigs, and might therefore be used in the prevention of calf paratyphoid, further tests with lab. animals and naturally infected calves were necessary.—R.M.

ATKINSON, N. & BULLAS, L. R. (1956). **Lysogenicity and lysis patterns in the salmonellas. VIII. Bacteriophage grouping of 167 strains of** *S. bovis-morbificans.*—*Aust. J. exp. Biol. med. Sci.* **34,** 349-360. **2606**

A further 153 strains of *S. bovis-morbificans* isolated in Australia and New Zealand were examined for lysis and lysogenicity patterns, bringing the total to 167. 120 strains were grouped; 33 could not be grouped. Results with epidemic strains indicated the potential value of the scheme in the investigation of epidemics.
—K. G. JOHNSTON.

KHACHATRYAN, A. B. (1955). [**Toxin formation by the salmonella causing acute septicaemia in young goats.**]—*Trud. armyan. nauchno-issled. vet. Inst.* **8,** pp. 53-57. [In Russian.] **2607**

Several strains of salmonella from acute septicaemia in goats were grown on "meat-peptone-agar" and "meat-peptone-broth" media with pH 7·6. When, after different periods of incubation, the organisms were killed and inocu-

lated into mice and rabbits, only suspensions from "ripe" culture, *e.g.* with the pH raised to 8·2–8·3 were highly toxic and produced death in all animals. Time of "ripening" varied according to strain (from 14–45 days). Heating of cultures at 70° to 80°C. for one hour did not affect their toxins.—S. TERLECKI.

BOWEN, S. T., GOWEN, J. W. & TAUBER, O. E. (1957). **Cortisone and mortality in mouse typhoid. I. Effect of hormone dosage and time of injection. II. Effect of environmental temperature. III. Effect of natural and acquired immunity.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 476-479; 479-482 & 482-485. [Authors' summaries modified.] **2608**

I. Cortisone, in single injections of 0·25 to 5 mg., markedly decreased the resistance of mice to *S. typhi-murium*. It had the greatest effect when administered within 2 days before or after infection. S/c injection of 0·1 to 10 mg. of two other steroids, progesterone and desoxycorticosterone acetate, had no effect on mortality.

II. Infected mice were maintained for 3 weeks either at 29° to 36°C. or at 21° to 25°C. At the higher temp. s/c injection of cortisone was more effective in reducing survival.

III. Seven strains of mice selected for their wide range of natural resistance to *S. typhi-murium* were used. In every strain resistance was decreased when 1 mg. of cortisone was given one day before infection. The difference between the survival of the mice given cortisone and that of controls was seen earlier in the susceptible than in the resistant strains. A single injection of 5 mg. of cortisone which prevented the survival of non-immunized mice had no significant effect on the survival of immunized mice.

I. BIRYUKOV, I. P. & PETRENKO, R. K. (1956). **[Method of preparation and control of a bacteriophage against *Salmonella pullorum*.]** —*Trud. saratov. zoo.-vet. Inst.* **6,** 30-34. [In Russian.] **2609**

II. PETRENKO, R. K. (1956). **[Some properties of *Salmonella pullorum* phage.]**—*Ibid.* 35-40. [In Russian.] **2610**

III. BIRYUKOV, I. P. (1956). **[Importance of *Salmonella pullorum* phage in controlling carrier infection.]** — *Ibid.* 41-45. [In Russian.] **2611**

I. A strain of bacteriophage, isolated from a fowl, possessed high lytic activity against a maximum number of strains of *S. pullorum*, at titres not lower than 10^{-10}–10^{-12}; it lysed bacterial cultures in less than 4–8 hours, and did not permit renewed growth before 1–3 days later. The phage was maintained on cultures in meat–peptone broth at pH 7·6. Its resistance to heat was increased by exposing successive passages to 58° to 60°C. for one hour. Batches of phage were prepared by filtering lysed cultures into 200–500 ml. flasks.

II. Pullorum phage was not toxic for animals, and no toxic symptoms were noticed during the treatment of *S. pullorum* infection in chicks with phage. The preparation used lysed 51 strains of *S. pullorum;* it did not lyse other bacteria.

III. Three doses each of 2 ml. of the phage preparation were given by mouth to fasted pullets on an infected farm, at intervals of 3 days. After treatment the number of reactors to the haemagglutination test was 3–6 times fewer, but some reactors persisted. Better results were claimed by commencing treatment at an earlier age, and by improving feeding and management.—R.M.

GERRIETS, E. (1957). Experimentelle Therapieversuche bei der S. pullorum-Infektion der Küken mit Aureomycin ad us. vet. Zweite Mitteilung. **[Aureomycin treament of *S. pullorum* infection in chicks. II.]**—*Arch. Geflügelk.* **21,** 118-123. [English summary.] **2612**

Further tests with aureomycin in doses of 300 and 600 mg./kg. against experimental *S. pullorum* infection of varying severity in chicks showed that the success of such treatment depends on its early application in adequate dosage, as well as on the severity of the infection.—G. P. MARSHALL.

GORDON, R. F. & TUCKER, J. F. (1957). **The treatment of chronic carriers of *Salmonella pullorum* with furazolidone.**—*Brit. vet. J.* **113,** 99-111. [Authors' summary modified.] **2613**

Administration of 0·04% furazolidone in the mash for 10 days to fowls whose sera reacted to the agglutination test for *S. pullorum* infection cured 73 out of 78 naturally and artificially infected carriers; 83% of the untreated carriers remained infected. Of the treated birds 33 failed to show agglutinins up to 120 days after treatment, and 44 had a marked decrease in titre. No decrease occurred in the untreated controls. *S. pullorum* was not recovered from 620 eggs laid by treated carriers nor from the chicks and dead embryos from 178 eggs. Conversely, it was recovered from 17 out of 1,583 eggs, from 14 out of 413 dead embryos and

from 22 out of 183 chicks from the untreated controls. In a field trial, the infection was eradicated from 31 flocks by removal of the positive reactors and feeding 0·04% furazolidone for 10 days.

HILL, C. H. & GARREN, H. W. (1957). **Levels of menadione and resistance to fowl typhoid.** —*Fed. Proc.* **16,** 388-389. **2614**

Eight groups of birds were fed a basal diet (of maize-soya bean meal and adequate vitamins) and menaphthone ("Menadione") at 10 mg./lb.; a diet containing high levels of all essential vitamins including ascorbic acid and menaphthone at 10 mg./lb.; a high vitamin diet with menaphthone at 50 mg./lb. After 4 weeks the test birds were inoculated with a culture of *S. gallinarum.*

Percentage survivors were 30·5, 44·4, 59·5 and 41·2 respectively. When vitamin K was used instead of menaphthone sodium bisulphite, the percentage survivors were 25, 58·8, 42·1 and 34·2 respectively. In a second experiment there was no increased resistance below 50 mg./lb. vitamin K. Prothrombin times were not affected.—T.E.G.R.

ŠTERZL, J. & TRNKA, Z. (1957). **Effect of very large doses of bacterial antigen on antibody production in new-born rabbits.**—*Nature, Lond.* **179,** 918-919. **2615**

Rabbits, 5 days old, were injected i/v or i/p with a medium dose (10^8 micro-organisms) of heat-inactivated antigen of *S. paratyphi B.* Excessive amounts of this antigen were administered to other groups of animals—$4–6 \times 10^9$ for 5-day-old and 2×10^9 for new-born rabbits. The medium dose elicited an antibody response at the 30th day of life while excessive doses caused a significant speeding up of antibody formation in both groups. Four months later survivors were re-vaccinated with 10^7. Significant inhibition of antibody formation was evident only in animals given excessive doses of antigen at 5 days; there was no inhibition in rabbits given 2×10^9 at birth.—T.E.G.R.

WIŚNIOWSKI, J. (1957). Jak należy interpretować wyniki badania serologicznego na bruceloze u bydła? **[Interpretation of results obtained in serological examination of cattle for brucellosis.]**—*Méd. vét., Varsovie* **13,** 6-9. [In Polish. English and Russian summaries.] **2616**

Examination of 27,000 serum samples from infected and 17,000 from Strain 19 vaccinated cattle revealed that in infected animals the complement-fixation and agglutination tests are equally sensitive whereas in the vaccinated the agglutination test is 155 times more sensitive than the c.f. test. Adult cows vaccinated with Strain 19 give positive reactions to both tests within a few days of vaccination, the highest titre appearing at 2 weeks. After that the c.f. antibodies gradually disappear and are absent by 10 months after vaccination while the agglutinins often remain active for years. W. suggests that repeated and simultaneously carried out c.f. and agglutination tests may help to differentiate between the vaccination titre and that following natural infection.—M. GITTER.

AMARASINGHE, A. (1955). **New procedures for differentiating specific from non-specific agglutination in bovine brucellosis serum and milk tests.**—*Arch. Inst. Pasteur Tunis* **32,** 259-282 & 491-522. [In English. French summary.] **2617**

Suspect serological reactions are discussed and reference is made to the paper chromatographic technique described by Hess & Roepke for the differentiation of specific from non-specific reactions. This method, however, cannot be applied in the field. The literature on naturally occurring non-specific agglutinins is reviewed. Absorption of non-specific agglutinins by a rough antigen was investigated. Best results were obtained with *Br. abortus* 9R, which absorbed non-specific agglutinins leaving specific ones (if present) free to combine with the smooth *Br. abortus* antigen. This was used for slide agglutination tests and for paper chromatography. Results are summarized in graph form.

Stained rough antigen and unstained regular antigen (for differential purposes) were used in the rapid plate agglutination test. Close correlation was observed between absorption, chromtography, heat treatment and the differential plate agglutination test.

The incidence of false positive reactions to the milk ring test is discussed. Experiments were carried out with diluted milk; cream alone; and previously heated milk. Results were compared with those of sero-agglutination and with epidemiological data. It is considered that heating the milk or cream samples for 2 hours at 65°C. in a water-bath inactivates non-specific agglutinins without significantly interfering with the specific reaction to the test with coloured antigen.—T.E.G.R.

FONTANELLI, E. (1956). La persistenza delle agglutinine specifiche nel sangue a seguito della vaccinazione preventiva col Buck 19.

[Persistence of specific agglutinins in the blood following immunization with Strain 19.] —*Zooprofilassi* **11,** 715-727. **2618**

The blood serum of 110 vaccinated calves aged 6–12 months was periodically examined for agglutinins. It was observed that about one year after vaccination almost all the animals gave negative reactions. In the few positive sera the titres were low (1:50) and at 18 months reactions were negative. It is, therefore, considered necessary to vaccinate animals at an early age (6–10) months with the object of conferring a solid "premunition" and of facilitating routine serological diagnosis.—T.E.G.R.

GOODE, E. R. JR., MANTHEI, C. A. & AMERAULT, T. E. (1957). **Relationship of age to susceptibility of nonvaccinated cattle to** *Brucella abortus*.—*Amer. J. vet. Res.* **18,** 279-282. [Authors' summary modified.] **2619**

There was no relationship of age to susceptibility of unvaccinated cattle to virulent *Br. abortus*. When exposed to virulent *Br. abortus*, the susceptibility of cattle purchased from herds showing no evidence of brucellosis was demonstrated to be significantly less than that of cattle raised in a carefully controlled brucella-free environment. Application was made of a numerical index of infection which more clearly illustrated the degree of susceptibility of unvaccinated cattle to virulent *Br. abortus* than did the percentage of infection. This index was also applied to unpublished results of vaccination studies and was effective in measuring the degree of immunity of cattle to brucellosis.

GRACHEV, I. I. & GALUSTYAN, R. A. (1957). **[Recovery from brucellosis of cattle on isolation farms.]**—*Veterinariya, Moscow* **34,** No. 2. pp. 20-21. [In Russian.] **2620**

All infected cows in a given district were collected into one herd, kept in strict isolation. Calves were reared from the age of 10 days on pasteurized milk in isolated calf pens away from the herd. If at 5–6 months they reacted to the diagnostic tests, they were slaughtered. There was periodic culling of aged or aborting cows; in one such herd 13% of the cows were culled during the first 3 years. At the end of 5 years, most cows no longer reacted to the agglutination and complement-fixation tests, and because they had all ceased to show clinical signs of infection for at least 3 years, the farm was removed from isolation after a disinfection of buildings. It was claimed that there was no danger to uninfected stock introduced at this stage. Cattle had a good chance of recovery from brucellosis only when protected from fresh infection in a closed herd, and kept under the best conditions of management and feeding. Under these conditions a large proportion of cattle became negative to diagnostic tests after 1–2 years. [See also *V.B.* **27,** 375.]—R.M.

RYAGUZOV, V. S., BESSARABOV, V. F. & GLUKHHOV, A. S. (1956). **[Treatment of brucellosis in cattle.]**—*Trud. novocherkassk. zoo.-vet. Inst.* **9,** 94-101. [In Russian.] **2621**

A substance named "preparation X" was described as a protein complex active against brucella *in vitro* and *in vivo*. No further details of its origin, preparation or composition were given. It was tried on 153 infected cattle in a brucellosis isolation herd; it was injected s/c in 20 g. doses daily for 6 days. It was claimed that there were fewer abortions and no febrile illnesses after treatment, and that the disappearance of positive reactions to the agglutination and complement-fixation tests was more rapid than that occurring normally in isolation herds. —R.M.

CEDRO, V. C. F. (1954). Inmunígenos en brucelosis. Pruebas en cobayos. **[Testing of inactivated brucella vaccines in g. pigs.]**—*Rev. Med. vet., B. Aires* **36,** 11-15. **2622**

Strains of *Br. suis* in the smooth phase were inhibited *in vitro* by dyes and by an antiseptic "Gillot". Tests in g. pigs revealed that vaccines treated with the dyes or with the antiseptic had little or no immunizing power. —T.E.G.R.

NIŽNÁNSKY, F. & KRČMÉRY, V. (1956). Aktivita hydrolytických enzýmov u brucelových kmeňov a jej význam pre typizáciu. **[Hydrolytic enzymes in brucella and their importance for typing.]**—*Vet. Čas.* **5,** 423-434. [In Slovak. German and Russian summaries.] **2623**

The authors studied lipase activity in 31 *Brucella abortus*, 35 *Br. suis* and 28 *Br. melitensis* strains by the titration method described by Willstädter *et al.* in 1923. Fatty acids, released from the substrate by the action of lipase, lower the pH of a test brucella suspension which results in a change of colour of the indicator added to the suspension. Potassium hydroxide is then added to restore the original pH and colour. From the amount of the potassium hydroxide added, the amount of fatty acids released can be estimated. Amylase activity was studied in 21 *Br. abortus*, 20 *Br. suis* and 21 *Br. melitensis* strains, using

soluble starch as substrate. The reduction in starch concentration was determined colorimetrically with the aid of a standard iodine solution.

These tests showed that the activity of hydrolytic enzymes was 4–5 times higher in *Br. suis* than in *Br. melitensis* and *Br. abortus*. The practical value of these findings for typing were discussed.—E.G.

ZWIERZCHOWSKI, J. (1956). Wartość swoistych szczepionek ochronnych w leptospirozie. [**Vaccines against leptospirosis.**]—*Weterynaria, Wroclaw* **2**, 17-34. [In Polish. English and Rusian summaries.] **2624**

A review of literature is given. Z. grew leptospira on modified Korthof medium at pH 6·9–7·2. The cultures were then centrifuged, 4/5 of the supernatant fluid discarded and the residue inactivated either by heat or by various chemical agents (*e.g.* 0·5% phenol). Subcutaneous vaccination of g. pigs resulted in rise of the blood agglutinins but to a lower titre than in experimentally infected animals. 8 out of 9 vaccinated g. pigs withstood challenge inoculation with suspension of leptospira infected liver whereas all 3 controls died. Vaccination of 20 silver foxes, 7–8 months old, resulted in rise of the blood agglutinins to a titre of 1:400–1:800, 7 days after the first dose of vaccine and to 1:800–1:3200, 14 days after the second dose (given 7 days after the first). The foxes were not challenged.—M. GITTER.

POGOSYAN, L. S. (1955). [**Immunobiological properties of anti-leptospirosis citrated blood.**]—*Trud. armyan. nauchno-issled. vet. Inst.* **8**, pp. 17-24. [In Russian.] **2625**

Anti-leptospirosis citrated whole blood is claimed to possess higher immunological and therapeutic properties as well as being more economical and practical in use than commercial serum. Serological tests revealed that the whole blood always contained more specific antibodies than serum. R.b.c. and fibrin also contained antibodies. Immunity conferred by anti-leptospirosis citrated blood was stronger and of longer duration than with serum inoculation. 2·5–3 times more animals could be effectively immunized or treated with whole blood as with the same quantity of serum. With addition of 0·5% of crystallized phenol it maintained its immunological properties for a year when kept at 8°–12°C.—S. TERLECKI.

MASCARO, L. A. (1957). La infección leptospirósica y la iridociclitis recidivante (fluxión periódica de los caballos. (Estudio bacteriológico.) [**Leptospira infection in equine periodic ophthalmia. A bacteriological study.**]—*Rev. Vet. Milit., B. Aires* **5**, 3-10. **2626**

Leptospira were recovered from laboratory animals injected with urine, suspensions of liver, kidneys, spleen and aqueous and vitreous humours from infected horses. The high agglutinating titre and the icteric colour of the eye humours and the presence of the organism in the humours are taken to indicate that the eye is the main reservoir in chronic cases. As a result of this and previous studies it is considered that the main causal agents of periodic ophthalmia are *L. pomona, L. suis* (anicteric type) and *L. icterohaemorrhagiae* and *L. bonariensis* (icteric type).—T.E.G.R.

GALLO, P. (1955). Estudio de la sensibilidad a los antibioticos de algunos especimenes de Clostridium hemolyticum aislados de casos de icterohemoglobinuria infecciosa en Venezuela. [**Sensitivity to antibiotics of some *Clostridium haemolyticum* strains isolated from cattle with infectious icterohaemoglobinuria in Venezuela.**]—*Rev. Med. vet., Caracas* **14**, 49-55. [English summary.] **2627**

The sensitivity of 4 strains of *Cl. haemolyticum* to antibiotics and sulphonamides was studied. Chloramphenicol, penicillin, bacitracin, chlortetracycline, oxytetracycline and dihydrostreptomycin were bacteriostatic in the order mentioned; polymyxin and sulphonamides did not inhibit growth. Bacitracin, dihydrostreptomycin, chlortetracycline, oxytetracycline, the triple sulphonamides, penicillin and chloramphenicol were bactericidal in the order given. —T.E.G.R.

MUKERJI, A. (1957). **Unsterilized or imperfectly sterilized bone meal. A potential source of some diseases in man and animals. (Some obervations in West Bengal.)**—*Indian vet. J.* **34**, 100-107. **2628**

Clostridium septicum, Cl. welchii and *Cl. chauvoei* were detected in culture and by g. pig inoculation in samples of bone-meal collected from sale depots and in samples of soil manured with a bone-meal mixture in certain districts of West Bengal. Increased use of bone-meal was suspected to be responsible for the greater incidence of blackleg in these districts in recent years.—R. N. MOHAN.

TOMESCU, V., ONCIOIU, P., SOCEANU, I., ŢIBREA, S., PETROVSCHI, M. & DOHOTARU, V. (1956). Contribuţii la prepararea unui ser antitetanic cu titrul ridicat. [**Preparation of highly potent antitetanus serum.**]—

Anu. Inst. Seruri Vaccin. Pasteur. Bucuresti **1,** 125-154. [In Roumanian. French, German and Russian summaries. Abst. from French summary.] **2629**

The following schedule of hyperimmunizing horses against tetanus is proposed. Two injections, with an interval of 30 days, of 15 ml. of tetanus toxoid adsorbed on 50% aluminium hydroxide; followed by 3 injections of 20 ml., 40 ml., and 60 ml., at intervals of 7 days, of toxoid adsorbed on 20% aluminium hydroxide; followed by 3 injections of 80 ml., 100 ml., and 150 ml. of tetanus toxin adsorbed on 20% aluminium hydroxide. For re-immunization 2 injections, of 150 ml. and 200 ml., of toxin adsorbed on 20% aluminium hydroxide are given. The schedule may vary for individual animals.—M.G.G.

OHYE, D. F. & SCOTT, W. J. (1957). **Studies in the physiology of *Clostridium botulinum* Type E.**—*Aust. J. biol Sci.* **10,** 85-94. [Authors' summary modified.] **2630**

Ten strains of *Cl. botulinum* Type E were studied at 12 temperatures between 2·5° and 45°C. Growth proceeded consistently from spore inocula between 5° and 37·5°C., but some strains developed slightly at temperatures up to 45°C. Maximum rates of growth occurred at 35°C. The upper and lower temp. limits were several degrees lower than for Type A and B strains. The heat resistance of the spores was about 1/1000th that of spores of some Type A and B strains. Type E toxin was found in greatest amount in cultures grown at 25°C. The toxin was most stable at pH 4·5–5 but more heat labile than Type A toxin. Two of 22 samples of marine mud yielded cultures containing botulinus toxin. The possible marine origin of Type E strains is discussed.

TRUEBLOOD, M. S. & TUCKER, J. O. (1957). **An improved medium for the cultivation of *Vibrio fetus*.**—*Amer. J. vet. Res.* **18,** 445-448. [Authors' summary modified.] **2631**

Evidence is presented that amniotic fluid, when added to brucella agar (2%) in a concentration of 5%, enhances the growth of *V. fetus*.

BURCH, G. R. (1957). **Management of "foot-rot" outbreaks in feeder cattle.**—*Allied Vet.* **28,** No. 2. pp. 9-11. **2632**

B. claimed that the addition of ethylenediamine dihydriodide to the food of beef cattle at a dosage of 200–400 mg. per animal daily, prevented the occurrence of foot rot and also gave good therapeutic results (disappearance of lameness after 10 days' treatment). Trials with about 150 cattle included an equal number of untreated controls.—R.M.

GIOVANELLI, N. E. (1956). El cloramfenicol en el tratamiento de la ulcera podal de los bovinos. **[Chloramphenicol in treatment of foot rot in cattle.]**—*Gac. vet., B. Aires* **18,** 223-225. [English summary.] **2633**

The drug was applied after cleansing the lesion with sterile water and, after curetting. The second method gave satisfactory results.

—T.E.G.R.

FLYNN, D. M. (1957). **Sheep (Foot Rot) Act 1956.**—*J. Dep. Agric. Vict.* **55,** 281-282. **2634**

The Sheep (Foot Rot) Act 1956 came into operation in Victoria on the 1st April, 1957. The Act was framed to give powers of controlling this disease without disrupting the sheep industry as might have happened had the disease been gazetted as a notifiable disease under the Stock Diseases Act. The power of inspectors to control the treatment of affected sheep and the duties of sheep owners are defined. A sheep owner may be ordered to treat his sheep by the methods prescribed, and it is an offence to expose for sale any sheep which is apparently affected with foot rot. The disposal of affected sheep is permitted only under prescribed conditions.—D. F. STEWART.

SENECA, H., KUPYN, O. & JOHNSON, A. (1957). **Effect of metisteroids on *Clostridium tetani, Clostridium welchii* and *Micrococcus pyogenes* var. *aureus* toxins.**—*Antibiot. & Chemother.* **7,** 155-159. [Spanish summary p. 205. Authors' summary modified.] **2635**

Metisteroids (prednisone and prednisolone) prolong the survival time of mice given lethal doses of *Cl. tetani* or *Cl. welchii* toxin, but they do not save the lives of the animals. Prednisolone hemisuccinate exerts a mild antihaemolytic effect against the soluble haemolysin of *Staphylococcus pyogenes* var. *aureus* and *Cl. tetani* but has no effect against *Cl. welchii* toxin.

STUR, D. (1957). Über die Bindung von Antibiotica an Bakterien. **[Attachment of antibiotics to bacteria.]**—*Zbl. Bakt. I. (Orig.)* **167,** 603-609. [English, French and Russian summaries.] **2636**

The quantitative adsorption of penicillin by susceptible bacteria, recently demonstrated by Eagle [*J. exp. Med.* **99,** 207 (1954)], who used radioactive isotopes, can also be demonstrated by established biological methods, when the size of the inoculum is taken as a criterion. A method is described which produces results closely approaching the results obtained by

Eagle. Using this technique to study the adsorption of streptomycin by Friedländer's bacillus and by tubercle bacilli, S. obtained results which suggested that this is many times greater than the adsorption of penicillin by susceptible *Staph. aureus*.—G. P. MARSHALL.

SEMENCHUK, K. L. & SKRUIPNIK, E. I. (1957). **[Bovine mastitis caused by *Candida*.]**—*Veterinariya, Moscow* **34,** No. 2. p. 54. [In Russian.] **2637**

Mastitis, mainly in only one quarter, was stated to have been caused by *C. tropicalis, C. stellatoides* or *C. paracrusei* in 27 cows on a farm in the Crimea. Infection was accompanied by fever, depression and, in some cases, atony of the rumen. It lasted for from 3 days to 4 weeks, and was associated with the feeding of large amounts of melon and beet.—R.M.

FORSTER, J. (1957). **A clinical trial of a new treatment for bovine ringworm.**—*Vet. Rec.* **69,** 519-520. [Abst. from author's summary.] **2638**

A lotion containing 0·25% hexadecamethylene-1 : 16-bis(isoquinolinium chloride) produced rapid and effective cures in over 100 cases.

GEORG, L. K., ROBERTS, C. S., MENGES, R. W. & KAPLAN, W. (1957). ***Trichophyton mentagrophytes* infection in dogs and cats.**—*J. Amer. vet. med. Ass.* **130,** 427-432. [Author's summary modified.] **2639**

The authors described 18 cases of *T. mentagrophytes* infection in dogs and 2 in cats. They suggested that the infection is not uncommon in these animals, though few cases have been recorded in the literature.

AJELLO, L. & GEORG, L. K. (1957). ***In vitro* hair cultures for differentiating between atypical isolates of *Trichophyton mentagrophytes* and *Trichophyton rubrum*.**—*Mycopathologia* **8,** 3-17. [In English.] **2640**

Strains of *T. mentagrophytes* and *T. rubrum* cannot always be distinguished morphologically. The two species differ, however, in the way in which they attack hair *in vitro*, the former alone producing perforating organs which give rise to wedge-shaped perforations in hair segments immersed in water. This test is of value for differentiation of the two species.—E. G. WHITE.

HILL, B. H. R. (1956). **Ringworm diseases affecting the cat.**—*N. Z. vet. J.* **4,** 157-160. **2641**

Microsporum canis infection is very common in cats, especially kittens, in New Zealand and causes widespread cases of tinea capitis in children. Diagnosis, treatment and epidemiology are discussed.—E. G. WHITE.

URI, J., SZATHMÁRY, S. & HERPAY, Z. (1957). **Production of an antibiotic by dermatophytes living in horn products.**—*Nature, Lond.* **179,** 1029-1030. **2642**

Keratinized tissues from 21 of 25 persons infected with dermatophytic fungi produced a zone of inhibition on agar plates inoculated with *Bacillus subtilis*. Little or no inhibition resulted when agar containing penicillinase was used. The production of penicillin and perhaps other antibiotics by pathogenic skin fungi may explain some cases of allergy to antibiotics.

—E. G. WHITE.

VOGELSANG, E. G. (1955). Rhinosporidium seeberi parasito del equino de Venezuela. **[*Rhinosporidium seeberi* in horses in Venezuela.]**—*Rev. Med. vet., Caracas* **14,** 27-30. **2643**

The parasite causes soft, whitish, granulomatous growths in the nasal cavities which recur after removal and bleed freely. The stroma is fibrous and the parasites (young and adult) are found underneath the epithelium. The adult forms are rounded and contain spores which, on maturing, break and liberate their contents which are excreted with the mucous discharge. The mature cysts liberate their contents through the micropyle as well as through rupture of the cellular membrane. The mode of transmission of the parasite is not known.—T.E.G.R.

FAIN, A. & HERIN, V. (1957). Deux cas de rhinosporidiose nasale chez une oie et un canard sauvages à Astrida (Ruanda-Urundi). **[Nasal rhinosporidiosis in a wild goose and a wild duck in Ruanda-Urundi.]**—*Mycopathologia* **8,** 54-61. [In French.] **2644**

Granular nasal polyps like those occurring in human rhinosporidiosis were found in the nasal fossae of a wild goose (*Alopochen aegyptiacus*) and a wild duck (*Dendrocygna viduata*). The polyps contained sporangia resembling those of *Rhinospiridium seeberi*, the cause of human rhinosporidiosis. This finding may explain the spread of infection from one country to another.—E. G. WHITE.

AUSTWICK, P. K. C. & VENN, J. A. J. (1957). **Routine investigations into mycotic abortion.**—*Vet. Rec.* **99,** 488-491. [Author's summary copied *verbatim*.] **2645**

Attempts to diagnose mycotic abortion in

cattle on a routine basis have shown that the condition may be recognised regularly by the direct and cultural examination of aborted foetuses and their associated placentae. The presence of hyphae in the foetal stomach content and in the necrotic cotyledons, together with the isolation of the fungus in pure culture, were the chief criteria employed, 601 foetuses and 52 placentae were examined by these methods and 41 cases of mycotic abortion diagnosed (average 6·2%). The fungi most frequently isolated were *Aspergillus fumigatus* (29 cases) and *Absidia ramosa* (4 cases). The first records of a yeast (*Candida tropicalis*) and a basidiomycete (*Polystictus versicolor*?) from this type of abortion are reported. Placental lesions of a characteristic type and discrete and diffuse foetal skin lesions were all observed on single occasions. The frequency of the condition in relation to other known causes of abortion suggests that it is of considerable economic importance.

GALIAT, V. K. (1957). **[Lethal action of certain chemicals on the fungus *Stachybotrys alternans*.]**—*Veterinariya, Moscow* **34,** No. 2. pp. 63-64. [In Russian.] **2646**

Cultures of *S. alternans* on straw aged 1, 4 or 6 months were not killed by 2–4% caustic soda soln. within 24 hours, but were killed within 5–6 hours by 4% formaldehyde soln. 2–3% phenol soln. killed spores of the fungus within 30 min.—R.M.

HASKINS, R. H. (1957). **Factors affecting survival of lyophilized fungal spores and cells.** —*Canad, J. Microbiol.* **3,** 477-485. **2647**

Spores of *Aspergillus, Alternaria, Gliocladium, Fusarium* and *Pestalotia,* vegetative cells of *Ustilago* and uredospores of *Puccinia* and *Melampsora* were studied, using several techniques of freeze-drying and various conditions before, during and after freeze-drying. The best percentage survival of the freeze-dried spores and cells was obtained when less severe initial freezing temperatures were used, *i.e.,* when they were just low enough to prevent the suspension from thawing until the conditions for evaporative freezing were reached. The duration of freezing did not affect the rate of survival of *Aspergillus* conidiospores. Conditions permitting fast warming of the frozen suspension resulted in increased survival. The duration of secondary drying was not critical. Beneficial effects of sucrose when mixed with suspending media were observed. Conditioning of the spores in a moist atmosphere immediately after opening of the tubes for revival greatly enhanced the percentage of germination of freeze-dried spores. It is claimed that preliminary evacuation treatment before freezing increases survival of the freeze-dried spores.

—J. E. CIPLIJAUSKAITE.

HYSLOP, N. ST. G. & FORD, J. (1957). **Therapy of contagious bovine pleuro-pneumonia. II. Preliminary observations on the treatment of early cases by chlortetracycline.**—*Vet. Rec.* **69,** 541-543. [Authors' summary modified.] **2648**

Four strains of the organism of bovine contagious pleuropneumonia isolated in East Africa were sensitive to chlortetracycline *in vitro*. The inhibitory action of the drug was less than that of chloramphenicol. Among 12 cattle infected by subcutaneous inoculation, no significant difference was observed in the regression rates of 7 untreated cattle and of 5 treated with chlortetracycline.

BISWAL, G., DAS, J. N. & NAYAK, B. C. (1957). **Treatment of contagious caprine pleuropneumonia.**—*Indian vet. J.* **34,** 117-127. **2649**

In experiments on artificially infected goats treated at varying post-infection periods, oxytetracycline and tetracycline yielded encouraging results and neoarsphenamine was ineffective.

—R. N. MOHAN.

BUTAS, C. A. (1957). **The isolation of pleuropneumonia-like organisms from two cases of polyarthritis.**—*Canad. J. Microbiol.* **3,** 419-426. **2650**

Two strains of a pleuropneumonia-like organism were recovered from 2 cases of acute recurrent polyarthritis in man. In each case the organisms were recovered from aspirated knee-joint fluid and no other micro-organisms were found. Cross agglutination tests using serum prepared in rabbits and serum from one of the cases showed the strains to be clearly related. On cultural and morphological grounds the organisms were considered to be members of the pleuropneumonia-group and not L-phase variants of some other bacterial species.

—A. GREIG.

See also absts. **2776** (brucellosis); **2867** (report, Australia); **2868** (report, New Zealand); **2869** (book, bacteriology and immunity); **2870** (book, infectious diseases of swine).

DISEASES CAUSED BY PROTOZOAN PARASITES

EDWARDS, E. E., JUDD, J. M. & SQUIRE, F. A. (1957). **Observations on trypanosomiasis in domestic animals in West Africa. III. The haematological changes produced in horses by infections of *Trypanosoma vivax, T. congolense* and *T. brucei*.**—*Ann. trop. Med. Parasit.* **51,** 63-79. [Authors' summary modified.] **2651**

An account is given of observations in Ghana on horses infected with *T. vivax, T. congolense* and *T. brucei*.

The trypanosome activity in the peripheral blood-stream of horses, irrespective of the species of parasite involved, is essentially comparable to that already described by the writers in goats and sheep [*V.B.* **27,** 421], the number of trypanosomes present in the blood fluctuating greatly from day to day in a most erratic manner, with no relationship to any of the factors hitherto studied. Infections in horses are accompanied by a serious deterioration in haematological values (r.b.c. count, volume, and Hb), the packed cell and the amount of haemoglobin, particularly in the last few weeks of the animal's life. There is also an increase in the erythrocyte sedimentation rate and in the plasma-bilirubin level, as well as a marked haemolysis.

CHANDLER, R. L. (1957). **Experiments with the trypanocidal compound "528" in West Africa.**—*Brit. J. Pharmacol.* **12,** 44-46. [Author's summary modified.] **2652**

Studies were made of the chloride salt of "528" ($N^1:N^3$-bis(4-aminocinnolyl-6′)-guanidine dimethiodide) against cattle trypanosomiasis in Nigeria. Toxic effects, terminating in death, were produced in cattle injected s/c with 5 mg./kg. and over. The maximum permissible dose was 2 mg./kg. The drug had a curative action against a syringe-transmitted strain of *T. congolense,* but not against two strains of *T. vivax*. It is concluded that "528" would be of little value in West Africa, where *T. vivax* is the more important cause of cattle trypanosomiasis.

GREWAL, M. S. (1957). **Pathogenicity of *Trypanosoma rangeli* Tejera, 1920 in the invertebrate host.**—*Exp. Parasit.* **6,** 123-130. [Author's summary modified.] **2653**

The pathogenicity of flagellates to their invertebrate hosts is discussed. The pathogenicity of *Trypanosoma rangeli* to *Rhodnius prolixus* was severe in the first nymphal instars. Bugs infected in the haemolymph were unable to moult. The pathogenicity of *T. rangeli* in the bed bug, *Cimex lectularius,* was greater than in *R. prolixus*. Invasion of the haemolymph was rapid. Bugs heavily infected in the haemolymph suffered higher mortality than those with lighter infections. Mortality is probably not connected with penetration of the gut wall, since it occurred in bugs infected directly in the haemolymph. Preliminary studies indicate that deficiency in certain amino-acids interferes with moulting in infected bugs.

DEANE, L. M. & DEANE, M. P. (1954). Encontro de cães naturalmente infetados por *Leishmania donovani*, no Ceará. **[Dogs naturally infected with *Leishmania donovani* in Brazil.]**—*Hospital, Rio de J.* **45,** 703-707. [Abst. from abst. in *Trop. Dis. Bull.* **54,** 549-550. (1957).] **2654**

The first findings of canine infection in an endemic area are recorded. Examination of smears obtained by liver biopsy and from skin lesions revealed *L. donovani* in 8 out of 72 dogs: in 4 the parasites were detected in both sites, in 2 in the liver only and in 2 in the skin only. At P.M. examination they were most numerous in the spleen and bone marrow. It is concluded that dogs are important reservoir hosts of human kala-azar in the State of Ceará. *Leishmania* infection was also demonstrated in 2 out of 5 wild dogs (*Lycalopex vetulus*).

AKATOV, V. A. (1957). **[Role of vaginitis in the predisposition of cows to trichomoniasis.]** *Veterinariya, Moscow* **34,** No. 2. p. 56. [In Russian.] **2655**

On two farms infected with "infectious follicular vestibulitis", 35 and 41% of the cows were infertile and *Tr. foetus* was isolated from 23 and 29%, respectively. On another farm, free from infectious vaginitis, trichomonads were isolated from only 0·5% of 720 cows. Vaginitis was regarded as the chief factor predisposing cows to trichomonas infection.—R.M.

REUSS, U. (1957). Die Züchtung von Trichomonas fetus im bebrüteten Hühnerei. **[Cultivation of *Trichomonas foetus* in embryonated eggs.]**—*Berl. Münch. tierärztl. Wschr.* **70,** 67-69. [English summary.] **2656**

Tr. foetus was cultivated in the vitelline sac and allantoic fluid of eggs incubated at 37·5° to 38°C. for 6 and 9 days respectively. The second method was the more successful; one

strain passaged over 100 times during 14 months could still be cultivated on a serum broth medium. The addition of penicillin and streptomycin to preputial washings before inoculating the allantoic sac is recommended.

—M. L. CLARKE.

MALEWITZ, T. D. & CALHOUN, M. L. (1957). **The normal hematological picture of turkey poults and blood alterations caused by enterohepatitis.**—*Amer. J. vet. Res.* **18,** 396-399. [Authors' summary modified.] **2657**

The haematology of 9 uninfected turkeys, 5 to 8 weeks old, was studied and compared with the results obtained by other investigators.

Of 12 turkeys inoculated with embryonated *Heterakis gallinae* ova 7 died from histomoniasis, 1 recovered, and 4 showed no signs of infection. The haematological picture in the 7 which died revealed a decrease in the total r.b.c. count, haemoglobin, and w.b.c. count, an increase in heterophiles and a decrease in lymphocytes; the monocytes, eosinophiles and basophiles remaining within a normal range. The one which recovered showed a decrease in the total r.b.c. count, Hb, and total w.b.c. count and an increase in heterophiles; all counts approached those of the controls at the time of exsanguination except for the lymphocytes, where a lymphopenia persisted. The 4 which showed no signs of infection had a slightly lower total r.b.c. count and Hb content, and a more variable total w.b.c. count than the controls, but no apparent change in the differential count.

LUND, E. E & BURTNER, R. H., JR. (1957). **Infectivity of *Heterakis gallinae* eggs with *Histomonas meleagridis*.**—*Exp. parasit.* **6,** 189-193. **2658**

These studies, to determine what proportion of the eggs of *H. gallinae* may be expected to contain *Histomonas meleagridis,* were carried out with a "naturally occurring, non-pathogenic strain" of *Histomonas,* using the rate of infection in chickens to indicate the presence of the parasite. [It is not clear whether the real criterion was the occurrence of lesions in the chickens or the recovery of histomonads]. It appeared that fewer than one out of every 200 embryonated eggs of the worm contained *H. meleagridis.* The incidence of infection varied in batches of eggs from different worms.—S. BRIAN KENDALL.

EDMONDSON, J. & BOBBY, F. C. (1956). **Effect of "Entramin" on sexual maturity and egg production of pullets.**—*N.Z. J. Agric.* **93,** 217-220. **2659**

The increased importance of histomoniasis in chickens in New Zealand has led to the use of "Entramin" (aminonitrothiazole). Controlled experiments showed that feeding the drug to disease-free pullets might lead to toxic symptoms evidenced by a reduction in food intake, retarded growth and a delay in sexual maturity with consequent reduction in egg production. Administration of the drug at 13 weeks of age had a more pronounced effect on sexual maturity than did similar administration at 7 weeks.

In view of these findings it is stated that the distributors intend to withdraw "Entramin" and to replace it with a safer related compound.

—S. BRIAN KENDALL.

OTT, W. H., KUNA, S., PORTER, C. C., CUCKLER, A. C. & FOGG, D. E. (1956). **Biological studies on nicarbazin, a new anticoccidial agent.** — *Poult. Sci.* **35,** 1355-1367. **2660**

This is primarily a review article, with some additional data on "Nicarbazin" which is stated to be a highly effective anticoccidial agent.

S. BRIAN KENDALL.

CUCKLER, A. C., POLIN, D. & PORTER, C. C. (1957). **Antagonistic effect of thiocarbanilide on 4,4'-dinitrocarbanilide, a component of nicarbazin.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 671-673. [Authors' summary modified.] **2661**

Thiocarbanilide, in a 1 to 1 ratio or less, inhibited the anticoccidial activity of nicarbazin when given parenterally as well as orally. Thiocarbanilide also antagonized the depigmenting effect of nicarbazin on the egg shell. In both instances, the antagonistic effect of thiocarbanilide was correlated with decreased plasma concentrations of dinitrocarbanilide. It is suggested that thiocarbanilide may interfere with the activity of nicarbazin through competition in absorption.

SCHOETTLE, C. E., REBER, E. F., NORTON, H. W. & ALBERTS, J. O. (1956). **A study of New Hampshire X Barred Columbian chicks from two days of age, to ten weeks of age. II. Effect of coccidiostats at ten weeks of age.**—*Poult. Sci.* **35,** 596-599. **2662**

In cockerels fed medicated diets from 2 days to 10 weeks of age, 3, 3-dinitrodiphenyldisulphide ("Nitrophenide") at a concentration of 0·02% significantly depressed the rate of growth; sulphaquinoxaline (0·0175%) had no significant effect, while 3-nitro-4-hydroxyphenylarsonic acid increased body weight and percentage of fat in the liver.—S. BRIAN KENDALL.

RAGHVACHARI, K. & REDDY, A. M. (1956). **Acute theileriasis in sheep.**—*Indian J. vet. Sci.* **26,** 123-124. **2663**

A preliminary note recording deaths in sheep caused by *Th. hirci*. The infection was transmitted to a lamb, but could not be transmitted to goats and other animals. Sulphadimidine given i/v saved 70% of treated sheep.

—R. N. MOHAN.

GATES, D. W., MADDEN, P. A., MARTIN, W. H. & ROBY, T. O. (1957). **The infectivity of blood from anaplasma-infected cattle as shown by calf inoculation.**—*Amer. J. vet. Res.* **18,** 257-260. [Abst. from authors' summary.] **2664**

Blood from 3 cattle in the carrier state, and from one with acute anaplasmosis, having serum titres of 1:10, 1:40, 1:160 and 1:320 respectively in the complement-fixation test, was used for titration of infectivity in splenectomized calves. The respective infectivity titres were 10^{-1}, 10^{-2} and 10^{-3} for the three carriers; the blood of the acute case had a titre of 10^{-5} in one group of calves and 10^{-6} in another group. The incubation period was generally progressively longer and the maximum percentage of parasitized r.b.c. progressively smaller with each tenfold dilution of the inoculum. The positive c.f. reactions in 14 of the 15 calves which developed anaplasmosis appeared either on the day when marginal bodies appeared in the blood, or shortly before it (average 3 days).

BROCK, W. E., PEARSON, C. C., STALEY, E. E. & KLIEWER, I. O. (1957). **The prevention of anaplasmosis by feeding chlortetracycline.** *J. Amer. vet. med. Ass.* **130,** 445-446. [Authors' summary modified.] **2665**

Of 15 yearling steers injected with 5 ml. of anaplasmosis-carrier blood, 5 were given 1 mg. of chlortetracycline (as "Aureofac-10") per lb. body wt. daily in feed for 60 days, 5 were given 0·5 mg. of chlortetracycline in the same manner, and 5 were left untreated. The 10 steers that were exposed and given the drug showed no evidence of anaplasma infection, except a transitory titre to the complement-fixation test. These steers were not carriers of anaplasmosis after this treatment. The 5 controls became infected.

PEARSON, C. C., BROCK, W. E. & KLIEWER, I. O. (1957). **A study of tetracycline dosage in cattle which are anaplasmosis carriers.**—*J. Amer. vet. med. Ass.* **130,** 290-292. **2666**

As a result of tests on 30 anaplasmosis-carrier cattle the authors recommend, for elimination of the infection, daily i/m inj. of 5 mg. of tetracycline/lb. body wt. for 10 consecutive days.—D. POYNTER.

WALZL, H. (1956). Zur Diagnostik der Toxoplasmose beim Hund. [**Diagnosis of toxoplasmosis in dogs.**]—*Wien. tierärztl. Mschr.* **43,** 795-802. [English, French and Italian summaries.] **2667**

W. described the P.M. and histological findings in encephalitis following distemper or "hard pad" disease in a 6-year-old crossbred Foxhound, and in an 8-year-old dog destroyed because of paralytic symptoms. No pseudocysts were seen in sections of the first case, but of two mice inoculated with lung tissue, one died 16 days later and toxoplasms were demonstrable in liver nodules, and also pseudocysts; the other mouse died suddenly 42 days later and pseudocysts were also found in liver cells. In the second dog, no evidence of toxoplasmosis was seen except the chance finding of pseudocysts in a vessel wall. The importance of experimental animal inoculation for the diagnosis of toxoplasmosis is emphasized.—M. L. CLARKE.

I. CATHIE, I. A. B. (1957). **Symposium on toxoplasmosis. An appraisal of the diagnostic value of the serological tests for toxoplasmosis.**—*Trans. R. Soc. trop. Med. Hyg.* **51,** 104-110. Discussion: pp. 118-122. **2668**

II. LAINSON, R. (1957). **Symposium on toxoplasmosis. The demonstration of *Toxoplasma* in animals, with particular reference to members of the Mustelidae.**—*Ibid.* 111-117. Discussion: pp. 118-122. [Authors' summaries modified.] **2669**

I. Investigations are cited to support the following conclusions. *Trichomonas, Trypanosoma gambiense,* and *T. cruzi* infections in man do not interfere with the dye test for toxoplasmosis. Infection with *Salmonella typhi* does not give rise to a positive c.f. reaction for toxoplasmosis using an egg antigen. Malaria in man does not interfere with the c.f. test using an egg antigen. Inactivation at 56°C. for 30 mins. does not reduce the titre of dye-test antibody in human serum; these antibodies, therefore, cannot be identified with properdin. Dye-test antibody in sheep sera is inactivated at 56°C. and so cannot be identical with the human antibody. The reliability of the dye and c.f. tests is upheld.

II. Brain tissue is the best material for inoculation into mice, preferably by the i/p route, and sub-inoculations should be carried out weekly to detect avirulent strains. *Toxo-*

plasma was isolated from one of 99 Norway rats and all of 5 members of the Mustelidae, but not from 399 house mice, 65 jackdaws, 6 rooks and 14 pigeons. All strains except that from the rat were of very low pathogenicity for mice; morphologically, biologically and serologically the mustelid toxoplasms were identical, and they were indistinguishable from strains previously isolated from rabbits. It is suggested that the 5 carnivores may have eaten infected flesh, possibly that of rabbits. Examination of more carnivores may yield interesting results. *Toxoplasma* appears to be a benign and well-adapted parasite. Disease is considered due to aberrant or altered strains; these may be obtained by passage in certain animals. The multimammate rat (*Mastomys coucha*) was much more susceptible to infection than mice. It is suggested that this animal might prove more suitable for studies of the parasite.

SUMMERS, W. A. (1957). **The effect of 2,4-dimethyl-3-hydroxy-5-hydroxy-methylpyridine (desoxypyridoxine) upon experimental toxoplasmosis in mice.**—*Exp. Parasit.* **6**, 194-201. [Author's summary modified.] **2670**

The vitamin B_6 antagonist, desoxypridoxine, delayed the death of mice experimentally infected with *Toxoplasma gondii*. Some animals appeared to be freed from infection. Pyridoxine HCl reversed this effect when fed at the same time. It also reversed the antivitamin B_6 action of desoxypyridoxine.

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

ESPINET, R. G. (1956). Teoria y practica de la vacuna antiaftosa saponinada. Resultados de la vacuna saponinada por via intradermica. **[Foot and mouth disease immunization using intradermal saponin vaccines.]**—*Gac. vet., B. Aires* **18**, 217-222. **2671**

Results of tests indicate that i/d vaccination of cattle with saponin vaccine in a dose of 0·5—1 ml. is an effective and practical method of immunization comparable with alum adsorbed vaccines administered by the same route. It has the advantages that it withstands both high and low temperature and the swelling disappears after 15—30 days, thus minimizing damage to the hide of animals submitted to frequent vaccination. The degree and duration of immunity were the same by the i/d as by the s/c route. —T.E.G.R.

FILIPPOVICH, S. M. (1957). **[Variability of the type characteristics of foot and mouth disease virus.]**—*Veterinariya, Moscow* **34**, No. 4. pp. 45-49. [In Russian.] **2672**

The author's conclusions were as follows: The virus possessed great antigenic plasticity, and under the influence of conditions of the external environment could undergo a wide range of changes. In experiments with g. pigs, types C and A (Vallée) changed most rapidly; in experiments with cattle, the variant types changed most rapidly. From the same immune animal, given multiple inoculations with one and the same strain of virus, it was possible to obtain several strains with different antigenic properties. Further work on the variability of the virus would aim at obtaining directly changed antigenic properties for highly immunogenic polyvalent vaccine strains.—R.M.

ELLIS, P. R. & EICHHORN, E. A. (1956). Incidencia y control de la fiebre aftosa y de otras enfermedades similares del ganado en las Americas de Octubre 1953 a 30 de Septiembre 1954. **[Incidence and control of foot and mouth disease and other diseases of livestock in America.]**—*Bol. Ofic. sanit. pan-amer.* **41**, 171-181. **2673**

According to information collected by the Pan-American Centre the general situation as regards F. & M. disease was satisfactory. The slaughter policy was favoured in some countries while in others, more from necessity than choice, immunization with trivalent vaccines was finding wider application. In the latter case it is considered that compulsory vaccination is essential to success; in countries where the disease is enzootic shortage of vaccines constitutes a serious problem. With regard to vesicular stomatitis there was little change except for a suspected outbreak. Progress in the control of vesicular exanthema is reported. Attention is drawn to the need for uniform control measures and regulations and an international system of quarantine.—T.E.G.R.

ATTILI, L. (1956). Sul valore di alcuni recenti metodi di laboratorio per la diagnosi della rabbia. **[The value of new laboratory methods of diagnosis of rabies.]**—*Boll. Ist. sieroter. Milano* **35**, 504-517. [English summary.] **2674**

Standard lab. methods of diagnosis of rabies are discussed and compared with recent ones which include the use of white mice for biological tests and the demonstration of Negri bodies by the method described by Sellers,

using a stain consisting of: 2 parts of 1% methylene blue soln. in methyl alcohol and 1 part of basic fuchsin soln. in methyl alcohol. The chances of demonstrating Negri bodies, it is stated, are increased by 50%. The use of white mice has the advantages that typical infection with marked clinical symptoms is set up by intracerebral injection; the period of incubation is short; and Negri body production is more or less abundant and constant. Results of personal observations are given.—T.E.G.R.

GHEORGHIU, I., SUHACI, I., NIŢOIU, I. & DINCULESCU, P. (1956). Viabilitatea virusului rabic fix din vaccinul antirabic glicerofenolat păstrat în diferite condiţii de temperatură şi lumină, verificate prin inocułări intracerebrale la iepuri. **[Viability of rabies fixed virus in vaccine containing phenol and glycerol, under various conditions of storage.]**—*Anu. Inst. Seruri Vaccin. Pasteur, Bucureşti* **1, 85-94.** [In Roumanian. French, German and Russian summaries. Abst. from French summary.] **2675**

Fixed rabies virus in phenol vaccine remained viable for up to 90 days when kept at 4° to 6° C. in the dark. Storage at 22° to 26° C. and exposure to light had a detrimental effect. When kept at 37° for 48 hours it was completely inactivated.—M.G.G.

ALOSI, C. (1956). Comportamento della frazioni protidemiche in cani vaccinati contro la rabbia. **[The serum protein fractions in dogs vaccinated against rabies.]**—*Acta med. vet., Napoli* **2,** 555-565. [English and French summaries.] **2676**

An electrophoretic study of the serum proteins of dogs vaccinated against rabies revealed a decrease in the albumin fraction and an increase in the gamma globulins. There were no significant changes in the other protein fractions. —T.E.G.R.

RAMAKRISHNAN, M. & ANANTHAPADMANABHAN, K. (1957). **An experimental study on the virus of buffalo-pox.**—*Indian vet. J.* **34,** 23-30. **2677**

Virus recovered from an epidemic of pox confined to buffaloes reproduced the disease experimentally in buffaloes, but caused milder lesions in cattle, sheep and goats. Cross-immunity tests in these species and in monkeys and rabbits revealed that the buffalo pox virus was identical with vaccinia virus.

—R. N. MOHAN.

GHEORGHIU, I., SUHACI, I., NIŢOIU, I. & STĂNCUŢ, I. (1956). Rezultate experimentale obţinute în vaccinarea găinilor contra difterovariolei aviare, cu virus variolic columbar din triturat de cruste variolice păstrate în diferite condiţii de temperatură şi lumină. **[Results of vaccination of fowls with pigeon pox virus, prepared from infective material stored under various conditions of temperature and light.]** — *Anu. Inst. Seruri Vaccin. Pasteur, Bucureşti* **1,** 65-75. [In Roumanian. French, German and Russian summaries. Abst. from French summary.] **2678**

Vaccine stored at 2° to 6°C. retained its infective and immunizing properties for up to 137 days after preparation. When it was stored at 2° to 6°C. for 44 days, and then at 18° to 24° for 3 days or at 37° for 24 hours, its immunizing power was greatly reduced. When it was stored at 2° to 6° for 12–17 days and then at 18° to 20° for 3–10 days, it gave satisfactory results (80–100% of follicles with typical reactions). Because of the sensitivity of this vaccine to temperature and moisture and its unsatisfactory immunizing power, a freeze-dried vaccine is now produced.—M.G.G.

FLEWETT, T. H. (1956). **Intracellular growth of some viruses of the pox group. An electron microscopic study of infected chick chorionic cells.** — *J. Hyg., Camb.* **54,** 393-400. [Author's summary slightly modified.] **2679**

Sections of chorio-allantoic membranes fixed at intervals after infection with large doses of vaccinia virus showed almost homogeneous areas appearing in the cytoplasm after 4 hours; these areas contained immature forms of virus which had a thin surface membrane and an excentric 'nucleoid', and were surrounded by mitochondria. Mature forms of virus, having a larger central nucleus-like structure and a thicker cortex, were first found in areas of virus growth 10 hours after inoculation. Similar immature and mature forms were found in cells infected with fowl pox, myxoma and ectromelia viruses. It is concluded that the immature forms are of low infectivity or not infective.

I. HENNEBERG, G. & DRESCHER, J. (1956). Untersuchungen über Depotimpfstoffe. I. Mitteilung: Untersuchungen über den Verlauf der γ-Aluminiumoxydresorption aus Depots von PR 8 Influenza virus-γ-Aluminiumoxydimpfstoffen. **[Studies of adsorbed vaccines. I. Resorption of γ-aluminium oxide from inocula of influenza adsorbate vaccine.]** — *Zbl. Bakt. I. (Orig.)* **167,** 310-326. [English,

French and Russian summaries.] **2680**

II. DRESCHER, J. (1957). Untersuchungen über Depotimpfstoffe. II. Mitteilung: Beschreibung einer Methodik zur Virusgehaltsbestimmung in exstirpierten Depots von PR8-Influenza virus-γ-Aluminiumoxyd-Impfstoffen. **[Studies of adsorbed vaccines. II. Determination of the virus content of extirpated inocula of γ-aluminium oxide influenza vaccine.]**—*Ibid.* **168,** 181-193. [English, French and Russian summaries.] **2681**

I. Factors influencing the adsorption of aluminium hydroxide (in the form of γ-aluminium oxide) from the site of inoculation were its mass, the amount of virus adsorbed on it, the volume of vaccine injected, and the reaction of the surrounding tissues. Absorption was most rapid 2–3 days after inoculation; it decreased later as a result of connective tissue reaction, but still continued up to the end of the period of observation (35 days).

II. The amount of virus remaining at the site of injection of aluminium hydroxide influenza virus was determined by extirpating the inoculum and extracting it with saline. The amount of virus remaining adsorbed on the aluminium hydroxide was calculated by comparing the virus content of the saline extract, with the amount and surface area of the adsorbant. Adsorption constants for the virus were also calculated. The infiltration of the site of injection by connective tissue reduced the capacity of aluminium hydroxide to adsorb the virus.—R.M.

LUM, G. S. & SMITH, P. K. (1957). **Experimental chemotherapy of influenza virus with particular reference to thiosemicarbazones and diphenyl compounds.**—*J. Pharmacol.* **119,** 284-293. [Abst. from authors' summary.] **2682**

Of 568 compounds tested, six diphenyl and related compounds, four thiosemicarbazones, an aliphatic compound and a pyrimidine analogue inhibited the PR8 strain of influenza A virus, and the Lee strain of influenza B virus in tissue culture. In preliminary experiments, some compounds prolonged the survival of mice infected with a lethal dose of virus.

COCKBURN, T. A., SOOTER, C. A. & LANGMUIR, A. D. (1957). **Ecology of Western equine and St. Louis encephalitis viruses. A summary of field investigations in Weld County, Colorado, 1949 to 1953.**—*Amer. J. Hyg.* **65,** 130-146. **2683**

The investigation was carried out after an outbreak of western equine encephalitis among human beings and horses in 1949 in Weld County, Colorado, where it was subsequently demonstrated that the virus was widespread among chickens, turkeys and wild birds. During 1950–53 inclusive, there was no incidence among human beings and cases in horses were rare. However, the western equine encephalitis virus was repeatedly isolated from mosquitoes, particularly *C. tarsalis*, and from nestling birds. There was little evidence of the virus of St. Louis encephalitis.—T.E.G.R.

ALEKSANDROWICZ, J., BRILL, J. & PERKOWSKA, E. (1956). Myelogramy koni chorych na niedokrwistość zakaźną. **[The bone marrow picture in horses with equine infectious anaemia.]**—*Roczn. Nauk rol. Ser. E.* **67,** 465-470. [In Polish. English and Russian summaries.] **2684**

Sternal and costal marrow smears stained by Giemsa stain, from horses either infected with or suspected of infectious anaemia were compared with those from healthy horses and from tetanus serum horses which had abscesses. The bone marrow picture in infected horses was not specific.—E.G.

GHEORGHIU, I., ONCIOIU, P., TOMESCU, V. & CARABULEA, V. (1956). Reactivarea formelor latente de anemie infecţioasă la caii folosiţi pentru prepararea serului antirujetic şi antitetanic. **[Reactivation of infectious anaemia in horses used for serum production.]**—*Anu. Inst. Seruri Vaccin. Pasteur, Bucureşti* **1,** 99-124. [In Roumanian. French, German and Russian summaries. Abst. from German summary.] **2685**

Out of 255 horses with latent equine infectious anaemia which were used for the production of serum against swine erysipelas 94 developed the acute disease. Of 238 similar horses producing antitetanus serum, only 17 developed acute disease, and of 60 horses producing serum against gas gangrene, anthrax, or *Clostridium chauvoei* infection none developed the acute infection. Inoculation of blood from suspected horses into foals yielded positive results in only 3·5% of cases. Of 26 foals which remained clinically healthy after receiving blood from latently infected horses, 23 developed acute anaemia 3–4½ months after receiving swine erysipelas antigen.—M.G.G.

ROONEY, J. R., JR. (1957). **Pathology of a bovine mucosal-type disease.**—*Amer. J. vet. Res.* **18,** 283-291. [Author's summary modified.] **2686**

R. described the pathology of a mucosal-

type disease occurring as an epizootic in Virginia [*V.B.* **26,** 3789]. Primary lesions were localized in the epithelium of the gastro-intestinal tract, interdigital skin and, rarely, the turbinate mucosa. Ballooning degeneration was a feature of the stratified epithelial lesions, while coagulation necrosis and crypt abscesses characterized lesions in the columnar epithelium. Secondary lesions in the lungs, liver, and kidneys were common and contributed significantly to mortality.

McKercher, D. G., Moulton, J. E., Madin, S. H. & Kenrick, J. W. (1957). **Infectious bovine rhinotracheitis. A newly recognized virus disease of cattle.**—*Amer. J. vet. Res.* **18,** 246-256. [Authors' summary modified.] **2687**

The clinical and epidemiological features of infectious bovine rhinotracheitis, a newly recognized virus disease of cattle, are described. The experimental work by which it was established as a disease entity is reviewed. Immunological studies in calves showed that an acute upper respiratory infection of California dairy cattle, a respiratory disease of California fattening cattle and rhinotracheitis of Colorado fattening cattle constitute a single disease entity, caused by this virus. Virus isolates recovered from each of the three syndromes were proved, by immunological studies in calves, to be identical. Pathogenicity and serological studies proved the isolated virus to be the causative agent of infectious bovine rhinotracheitis.

York, C. J., Schwarz, A. J. F. & Estela, L. A. (1957). **Isolation and identification of infectious bovine rhinotracheitis virus in tissue culture.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 740-744. [Authors' summary modified.] **2688**

An agent producing a cytopathogenic effect was isolated in bovine embryo tissue culture cells from upper respiratory tissues of cattle with infectious bovine rhinotracheitis. Lack of growth in bacteriological culture media, resistance to such antibiotics as penicillin and streptomycin, and ability to pass through fine porosity filters suggest that this agent is a virus. Reproduction of a disease in experimental cattle, protection tests in cattle using tissue culture virus and infective material from naturally occurring cases, as well as neutralization tests with serum from naturally and experimentally infected cattle, indicate that this virus is the causal agent of infectious bovine rhinotracheitis. Serum neutralization tests also indicate that viruses isolated from different parts of the U.S.A. are closely related antigenically.

Weiss, K. E., Haig, D. A. & Alexander, R. A. (1956). **Wesselsbron virus—a virus not previously described, associated with abortion in domestic animals.**—*Onderstepoort J. vet. Res.* **27,** 183-195. **2689**

Outbreaks of abortion in ewes and heavy mortality in the young lambs caused by the virus of Rift Valley fever have occurred in S. Africa in recent years. In other clinically similar outbreaks the Rift Valley fever virus could not be demonstrated. From such an outbreak a virus has been isolated and its properties are here described. This has been named Wesselsbron virus. The Wesselsbron virus has the same host range as that of Rift Valley fever, namely sheep, cattle, horses, pigs and man, but is antigenically distinct from it. Sheep immunized against Rift Valley fever are susceptible to the Wesselsbron virus. The adult mouse is resistant to intraperitoneal injection: this provides a rapid method for differeniating Wesselsbron from Rift Valley fever virus. The virus is widespread in S. Africa and of great economic importance in the sheep industry. Its economic importance in cattle, horses and pigs is not yet known. It multiplies in the chick embryo and is transmitted by mosquitoes.

McKercher, D. G., McGowan, B., Jr., Cabasso, V. J., Roberts, G. I. & Saito, J. K. (1957). **Studies on bluetongue. III. The development of a modified live vaccine employing American strains of bluetongue virus.**—*Amer. J. vet. Res.* **18,** 310-316. [Authors' summary modified.] **2690**

With the discovery of bluetongue in the U.S.A. in 1953, there was an immediate demand for a vaccine. Two American strains of the virus, rather than the S. African vaccine strains which might involve risk, were used to develop a modified live virus vaccine on the basis of the procedure followed at Onderstepoort. The virus was readily attenuated by serial passage in fertile hen's eggs. When the strains were found to produce a negligible clinical and systemic response in sheep, a freeze-dried vaccine was prepared from both strains. Inoculation of the dried product into sheep showed that the virus did not regain its virulence by serial passage in the natural host, nor produce unduly severe vaccine reactions in adults. The vaccine protected against a massive challenge with virulent virus. Large-scale field trials were then carried

out with a commercially produced vaccine [see *V.B.* **26,** 3159].

Titration of the vaccine which was stored at 4°C., indicated that during a 30-month period the drop in titre was minimal.

POTEL, K. (1956). Über das Encephalitisproblem bei Schweinepest. **[The encephalitis problem in swine fever.]**—*S.B. dtsch. Akad. LandWiss.* **5,** No. 17. pp. 15. **2691**

A discussion, based on experimental research, on the pathogenesis of swine fever, with special reference to the c.n.s. P. stated that encephalitis is a frequent feature of experimental as well as natural infection, without the virus necessarily becoming neurotropic. He discussed the role of a functional circulatory insufficiency in the formation of inflammatory lesions in the nervous system and stated that this insufficiency is probably caused by the action of the virus on the autonomic nervous and endocrine systems.—E.G.

POTEL, K. (1956). Experimentelle Untersuchungen zum Wanderungsweg des Schweinepestvirus nach seiner parenteralen Applikation. **[Migratory route of swine fever virus after parenteral inoculation.]**—*Arch. exp. VetMed.* **10,** 604-614. **2692**

P. infected 17 three-month-old piglets s/c into the left hock with 1 ml. of defibrinated blood from a pig with swine fever. The animals were killed during the incubation period 4–72 hours after infection at irregular intervals. Up to about 48 hours after infection, with only two exceptions, there were no visible changes in the popliteal lymph nodes. Involvement of other lymph nodes varied according to the stage of the infection. In one pig there were characteristic infarcts in the spleen 20 hours after infection. In carcasses of pigs, killed 2–3 days after infection, there was the characteristic haemorrhagic form of septicaemia. In the left popliteal lymph node the virus was present 6 hours, in the right 24 hours, and in the blood 8 hours after infection. As a rule virus concentration increased with the stage of infection. Histologically lesions in the lymph nodes resembled those seen in the intestinal follicles [*V.B.* **25,** 4035]. It is stated that although eosinophile leucocytes are present in lymph nodes of healthy pigs, the massing of these in infected nodes was particularly marked.—E.G.

KHLUSTSOV, K. A. (1956). **[Pneumonia in pigs associated with inoculation of swine fever crystal violet vaccine into the neck.]**—*Bull. nauchno-tekh. Informatsii, Leningrad. nauchno-issled. vet. Inst.* No. 1. pp. 24-26. [In Russian.] **2693**

Experiments with piglets and lab. animals supported the contention of Dmitriev & Kitaevich [*V.B.* **26,** 2607] that pneumonia could be caused by stimulation of the vagus nerve by vaccine injected into or around the cervical part of the nerve. Inoculation of swine fever crystal violet vaccine into the neck of 150 piglets resulted in a large proportion [number not given] having a rise of body temp. to 40·5°–41°C. 2–3 days after inoculation, lasting for 1–3 days. Some of them developed accelerated breathing, coughing and persistent high temp.; slaughter revealed acute pneumonia. 150 control piglets were inoculated with the vaccine in the shoulder: neither rise in body temp. nor lung lesions were found in this group.—R.M.

PEHL, K. -H. & SCHULZE, W. (1956). Zur Frage der Immunitätsbildung nach Vakzinierung gegen Schweinepest mit Kristallviolett-Vakzine. **[Development of immunity to swine fever after vaccination with crystal violet vaccine.]**—*Arch. exp. VetMed.* **10,** 591-603. **2694**

Immunity, conferred on piglets 8–14 weeks old, by two s/c doses at an interval of 14 days, of 5 ml. each, of crystal violet swine fever vaccine, set in earlier and lasted longer than by a single vaccination. For piglets with chronic infections like influenza and TB., an interval of 3 weeks between vaccinations appeared preferable.—E.G.

TORREY, J. P., ZINOBER, M. R., AMTOWER, W. C. & GITZ, G. H. (1956). **Studies on modified virus vaccines for hog cholera. I. Losses in farm herds after vaccination.**—*Proc. 59th Ann. Meet. U.S. live Stk sanit. Ass.* 1955. 343-352. **2695**

The efficacy of 4 methods of vaccination was investigated, and the following results are reported. Modified live virus administered simultaneously with "BAI experimental serum No. 1" conferred adequate protection in 6 herds but failed in 3; administered alone it was effective in 3 herds; in 4 herds no virus was demonstrated in the tissues of animals which died after vaccination; in 5 herds reactions were variable. Tissue culture vaccines administered simultaneously with "BAI" serum conferred adequate protection in 3 herds but failed in 2; in one herd vaccine alone effectively immunized the pigs. A chemically treated vaccine was used on 2 herds. In one of them a virus was demon-

strated which differed from regular virus and in the other a virus was demonstrated which did not differ from regular virus. In herds treated with serum and virus results were: pigs were not adequately protected when injected with the virus under test simultaneously with 10 ml. of a commercial serum which was proved to have protective properties against regular virus in this dose; virus and 15 ml. of "BAI" serum gave adequate protection; no virus was demonstrated in the tissues of animals which died after vaccination; reactions were variable.—T.E.G.R.

DALE, C. N. & SONGER, J. R. (1957). *In vitro* **propagation of hog cholera virus. I. Method of cultivation and observations on color changes in the medium.**—*Amer. J. vet. Res.* **18,** 362-368. [Authors' summary modified.] **2696**

In vitro propagation of swine fever virus was readily established in a fluid medium (modified Tyrode's) containing minced tissue of pig spleen. By serial passages of three or four days' incubation, the 15th passage gave a 10^{-5} infectivity titre when tested in pigs. Dilutions of 10^{-4}, 10^{-5}, 10^{-6}, and 10^{-7} were injected into pigs, using 2 pigs for each dilution. Those pigs receiving 10^{-5} dilution or lower died from swine fever, while those receiving higher dilutions remained normal. Crystal-violet vaccines separately prepared with virus from the 10th, 11th, and 12th passages failed to produce any detectable degree of immunity in pigs given s/c injections of 10 ml.

An agent which produced discoloration of the medium was propagated concomitantly with the swine fever virus. By *in vitro* titration, it was shown to have a titre varying from $10^{-7.6}$ to $10^{-8.3}$. A correlation between the titres of the two propagated agents was not demonstrated.

BAKOS, K. (1957). **The cytopathogenicity of two different strains of swine influenza virus.** —*Nord. VetMed.* **9,** 369-372. [In English. German and Swedish summaries. English summary modified.] **2697**

The cytopathogenicity of the Iowa 15 (Shope, 1931) and Wisconsin (Kissling, 1949) strains of swine influenza virus was compared in cultures of pig tissues. The Iowa strain had a pronounced cytopathogenic effect after 4–5 serial passages in tissue culture, the Wisconsin strain remaining only weakly cytopathogenic after 12 such passages. The Wisconsin strain had a low infectivity for chick embryos and mice, whereas the Iowa strain was highly infective.

FASTIER, L. B. (1957). **A new feline virus isolated in tissue cultures.**—*Amer. J. vet. Res.* **18,** 382-389. [Author's summary modified.] **2698**

F. described the isolation, growth characteristics, and host range of a virus responsible for intense cytopathogenic changes in kitten kidney tissue cultures. Both the low virulence for cats and restriction of *in vitro* growth to tissues from this animal species suggests that the agent might best be regarded as an "ECHO virus" of cats.

RENDTORFF, R. C. & WILCOX, A. (1957). **The role of nematodes as an entry for viruses of Shope's fibromas and papillomas of rabbits.** —*J. infect. Dis.* **100,** 119-123. [Authors' summary modified.] **2699**

The application on the skin of rabbits of larvae of the nematode *Nippostrongylus muris,* mixed with a suspension of rabbit papilloma virus, produced tumours in all of nine rabbits. The similar application of nematode larvae and a suspension of rabbit fibroma virus produced only a single questionable tumour in one of ten rabbits. None of these rabbits developed tumours in control areas on the skin where virus alone or nematodes alone were applied.

ŠKODA, R. & ŽUFFA, A. (1956). Newcastelská choroba u bažantov. **[Newcastle disease in pheasants.]**—*Vet. Čas.* **5,** 441-448. [In Slovak. German and Russian summaries.] **2700**

The authors isolated a strain of Newcastle disease virus from pheasants found dead or dying. The virus was pathogenic for domestic poultry. By cross-neutralization tests with hyperimmune rabbit serum, it was shown that the strain was of high immunogenic quality. Complement-fixation tests and haemagglutination-inhibition tests were inconclusive because of the presence of non-specific antibodies and the haemolytic effect of rabbit sera on fowl erythrocytes. The role of wild birds as a potential source of disease for domestic flocks was discussed.—E.G.

GOLDWASSER, R. & KOHN, A. (1957). **Neutralization and titration of Newcastle disease virus in chicken embryo tissue cultures.** — *Amer. J. vet. Res.* **18,** 390-395. [Authors' summary modified.] **2701**

Methods utilizing monolayer tissue cultures of chick embryo tissues for the performance of titration and neutralization tests of Newcastle disease virus (NDV) are described. Virus titres were determined either by direct microscopic

observation of cell destruction or by the appearance of haemagglutinins. The former required changes of medium and 4–5 days' incubation, whereas the latter required, in one of the methods used, 2–3 days' incubation and no change of medium. In the case of neutralization tests, haemagglutinin appearance only was used as the criterion of the presence of unneutralized virus. Results of titrations and neutralization tests in tissue culture were comparable though not identical with those found in embryonating eggs.

Chick embryo fibroblasts metabolized glucose more rapidly than necessary for cell maintenance, leading under certain conditions to cell degeneration due to excessive acidification of medium. Sodium acetate, but not sodium pyruvate or lactate, could replace glucose in the tissue culture medium.

SAGIK, B. P. & LEVINE, S. (1957). **The interaction of Newcastle disease virus (NDV) with chicken erythrocytes: attachment, elution, and hemolysis.**—*Virology* **3,** 401-416. [Authors' summary modified.] **2702**

As with all virus systems investigated, salt is necessary for attachment of N.D.V. to fowl r.b.c. Attachment is maximal and constant between pH 5 and 9. It falls to a minimum at about pH 4. A second attachment minimum occurs at pH 10 to 10·5. The positions of the minima suggest that carboxyl and amino groups on the virus and r.b.c. are involved in the attachment. The characteristics of attachment to r.b.c., requirement for salt, pH dependence and rate, are identical to those observed with chick embryo host cells.

Elution of the virus from r.b.c. is promoted by a high rate of attachment of virus particles to r.b.c. (virus multiplicity), a pH between 6·8–7·7, and a temp. of 37°. Lowering the virus multiplicity, the pH to 5·9, or the temp. to 5° tends to suppress the reaction. However, at pH 7·7 with a multiplicity as low as 2, elution can occur even at 5°. Elution can occur when only one particle is attached per r.b.c. provided the temp. is 37°.

Haemolysis is affected by pH and multiplicity in a manner opposite to that of elution, suggesting that these two viral activities involve separate reactions. Haemolysis is favoured by a low virus multiplicity, and pH 5·9, both conditions which hinder elution. However, like elution, haemolysis is inhibited by low temp. Under favourable conditions of pH and multiplicity, haemolysis can occur at 18°. A single virus particle, from a haemolytic stock, per r.b.c., is capable of causing haemolysis. Attempts to separate the haemolysin from the virus particle were unsuccessful.

SCHMIDT, U. & BINDRICH, H. (1956). Zur Frage der Ausscheidung und Vermehrung des Virus der atypischen Geflügelpest nach Infektion immuner Hühner. **[Excretion and multiplication of Newcastle disease virus after the infection of immune fowls.]**—*Arch. exp. VetMed.* **10,** 649-660. **2703**

Immunity in cockerels, vaccinated with live Hertfordshire virus and two adsorbed vaccines, subsided after various periods, according to the vaccine used. When re-infected during this transitory stage, some excreted virus without any clinical symptoms. Virus excretion was observed only when the serum antibody titre fell below 1:20 or 1:16 and the serum neutralization titre was lower than the haemagglutination-inhibition titre. It was estimated that the test virus had multiplied in the organs of some clinically immune excretors nearly 100,000 times.

Results obtained in these experiments confirmed some of the findings reported by Asplin [*V.B.* **22,** 3399] and Dinter & Bakos [*V.B.* **24,** 2767].—E.G.

PAPPARELLA, V. & CATELLANI, G. (1956). Osservazioni e ricerche sulla malattia respiratoria dei poli recentemente diffusasi in Italia. **[Avian infectious bronchitis in Italy.]**—*Acta med. vet., Napoli* **2,** 449-482. [English, French and German summaries.] **2704**

The disease was first observed in Italy in 1956. From the present study of its epidemiology and symptomatology, experimental transmission, chick embryo inoculation and haemagglutination tests the condition is diagnosed as avian infectious bronchitis. This diagnosis is also supported by histo-pathological changes in experimentally infected chick embryos.—T.E.G.R.

PIROZOK, R. P., HELMBOLDT, C. F. & JUNGHERR, E. L. (1957). **A rapid histological technique for the diagnosis of infectious avian laryngotracheitis.**—*J. Amer. vet. med. Ass.* **130,** 406-408. [Abst. from authors' summary.] **2705**

"Carbowax 1000 W" (a solid polyethylene glycol) gave satisfactory results as an embedding medium for sectioning tracheas in the differential diagnosis of laryngotracheitis. Reliable slides were prepared in 3 hours.

SHELTON, D. C., BLETNER, J. K., OLSON, N. O., ANDERSON, G. C. & WEAKLEY, C. E., JR.

(1957). **Control of infectious synovitis. I. Continuous feeding of antibiotics and the influence of diethyl-stilbestrol and coccidiostats.**—*Poult. Sci.* **36,** 113-121. [Abst. from authors' summary.] **2706**

OLSON, N. O., SHELTON, D. C., BLETNER, J. K. & WEAKLEY, C. E., JR. (1957). **Infectious synovitis control. II. A comparison of levels of antibiotics.**—*Amer. J. vet. Res.* **18,** 200-203. [Authors' summary copied *verbatim.*] **2707**

I. The use of crystalline aureomycin, terramycin and erythromycin in the control of infectious synovitis was studied experimentally. Erythromycin was ineffective. However, 200 g. of aureomycin or terramycin per ton of feed was effective when fed continuously. Terramycin appeared less effective when treatment was delayed until after the birds showed signs of synovitis. Haemoglobin values were lowered substantially in infected birds. There were marked changes in the differential w.b.c. counts: a reduction in lymphocytes, but an increase in heterophiles, monocytes and immature forms.

II. Under the conditions of this experiment, there were no marked differences in weight gains in birds on equivalent levels of chlortetracycline, oxytetracycline, and equal parts of the two. Chlortetracycline was more effective in controlling the development of swellings than were either oxytetracycline or a combination of oxytetracycline and chlortetracycline. Streptomycin and penicillin given in the feed were not effective in controlling infectious synovitis.

SIEBURTH, J. McN. & JOHNSON, E. P. (1957). **Transmissible enteritis of turkeys (bluecomb disease). I. Preliminary studies.**—*Poult. Sci.* **36,** 256-261. [Abst. from authors' summary.] **2708**

The virus-like agent, labile, and neutralized by specific convalescent serum, was capable of producing the disease. Attempts to propagate it in embryonated eggs and chick embryo cell cultures were unsuccessful. [See also *V.B.* **27,** 786].

MACPHERSON, L. W. & AVERY, R. J. (1957). **Duck virus hepatitis in Canada.**—*Canad. J. comp. Med.* **21,** 26-31. [French summary.] **2709**

In the spring of 1956 severe losses occurred in a duck hatchery in British Columbia. The disease was confined to ducklings between 7 and 14 days of age and the mortality varied from less than 5% to 40%. Following the inoculation of embryonated eggs with material from dead ducklings, an agent was isolated which proved capable of reproducing the lesions observed during the outbreak. Serological studies indicated a cross neutralization of the newly isolated B.C. strain of duck hepatitis virus with the Levine & Fabricant strain from the initial outbreak in the U.S.A. in 1950 [*V.B.* **20,** 2296].

—R. V. L. WALKER.

DAVIS, D. E., DELAPLANE, J. P. & WATKINS, J. R. (1957). **The role of turkey eggs in the transmission of ornithosis.**—*Amer. J. vet. Res.* **18,** 409-413. [Authors' summary modified.] **2710**

Virus was not recovered from dead embryos or poults obtained from eggs laid by breeder turkeys experimentally infected with the Jo strain of psittacosis virus. When fresh turkey eggs were inoculated with the virus, the agent was not recovered beyond the 9th day of incubation. When 7-day-old turkey embryos were inoculated the mortality was high and the virus was not recovered beyond the 16th day. The virus was not recovered from eggs laid by hens in the viraemic stage of psittacosis; the attempts were made on new-laid and 24-hour incubated eggs. Psittacosis virus lived no longer than 3 days on turkey egg shells or 4 days on cotton swabs under egg-incubator conditions.

MONACI, V., PREBIL, M., GASTALDI, C. & VOLPATO, C. (1956). Su di un episodio da virus del gruppo psittacosi-ornitosi. [**An outbreak of psittacosis in human beings in Italy.**]—*Boll. Ist. sieroter. Milano* **35,** 451-458. **2711**

An outbreak of psittacosis involving 26 people, of whom one died, was traced to a parrot. Laboratory tests confirmed the clinical and radiological diagnosis. Elementary bodies (characteristic of the psittacosis—lymphogranuloma group of viruses) were demonstrated in the peritoneal exudate and spleen of mice inoculated with the blood of 2 of the patients. The titres of c.f. antibodies were significantly higher during convalescence than during the acute phase of the disease.—T.E.G.R.

SHOPE, R. E. (1957). **The leech as a potential virus reservoir.**—*J. exp. Med.* **105,** 373-382. [Author's summary modified.] **2712**

Leeches, fed on pigs with swine fever, contained virus for as long as 87 days. In 3 instances, infected leeches apparently transmitted swine fever to susceptible pigs during feeding. Myxoma virus persisted in leeches for

as long as 154 days after the ingestation of blood from rabbits with myxomatosis. Leeches fed first on pigs with swine fever, and later on rabbits with myxomatosis, acquired both viruses. In such dually infected leeches, swine fever virus persisted for as long as 122 days and myxoma virus 110 days, the longest peroids tested. Leeches fed first on rabbits with myxomatosis, and later on pigs with swine fever, acquired only the myxoma virus. The two viruses appeared to be present in similar quantities in the anterior and posterior thirds of the bodies of infected leeches. They were in the bloody gut contents but were not demonstrable in the body tissues. It appears that leeches are not biological carriers of these viruses but harbour them in the gastro-intestinal tract and protect them from various chemical and physical influences. It is suggested that leeches could play a role in perpetuating the blood-borne viruses of certain diseases in which close association with fresh water is of epidemiological importance.

JORDAN, W. S., JR. (1957). **Failure to transmit human nonbacterial gastroenteritis to cats.**—*Proc. Soc. exp. Biol., N.Y.* **94**, 692-695. [Author's summary modified.] **2713**

Aliquots of filtered supernatant fluid from stools of volunteers with induced afebrile (Marcy) and febrile (FS) non-bacterial gastroenteritis capable of inducing human disease were administered by stomach tube to cats. No recognizable disease was produced.

BREZINA, R. (1956). Niektoré experimentálne poznatky z práce s pôvodcom Q horúčky C. burneti. [**Experimental research on** *Rickettsia burneti.*]—*Vet. Čas.* **5**, 323-327. [In Slovak. Russian and German summaries.] **2714**

B. isolated *Rickettsia burneti* from *Dermacentor marginatus,* engorged on g. pigs which had been infected experimentally 6–8 months previously. Experimental infection of g. pigs by skin scarification and by inoculation into the conjunctival sac was successful.—E.G.

See also absts. **2609-2611** (S. pullorum phage); **2775** (F. & M. disease); **2867** (report, Australia); **2870** (book, infectious diseases of swine).

IMMUNITY

SPAR, I. L., BALE, W. F. & GOODLAND, R. L. (1957). **Use of urea and salicylate to elute antibody from insoluble antigen.**—*Proc. Soc. exp. Biol., N.Y.* **94**, 803-807. [Authors' summary modified.] **2715**

Solutions of 16–32% urea and of 10% sodium salicylate were used to separate I^{131} labelled rabbit anti-rat organ antibodies from insoluble rat organ residues acting as antigens. After removal of these eluting agents, the antibody retained its specificity for rat organs as measured by *in vivo* and *in vitro* techniques; *in vivo,* rabbit gamma globulin was resistant to the altering or denaturing effect of the reagents.

RICE, C. E. & DUHAMEL, L. (1957). **A comparison of the complement, conglutinin, and natural anti-sheep red cell antibody titres of the serum of new born and older calves.** — *Canad. J. comp. Med.* **21**, 109-116. [French summary.] **2716**

The authors could not demonstrate any relationship between the time of development of the natural anti-sheep red cell antibody and that of the globulins comprising the complement and conglutinin systems. The haemolytic complement activity was demonstrated in the serum of all 22 new-born calves examined before they had ingested colostrum; most calves also had weak conglutinative activity at this time but the titres were quite low: A considerable rise in both these activities was evident at the end of the first month, but the majority of calves still had little or no anti-sheep red cell antibody in their serum. This latter activity had risen considerably at the end of the 6th month and was maximal at 9 or 12 months.—P. BOULANGER.

LILLE-SZYSZKOWICZ, I. & WOYCIECHOWSKA, S. (1956). Przypadek ronienia klaczy jako następstwo konfliktu serologicznego. [**Abortion in a mare probably due to iso-immunization.**]—*Roczn. Nauk Rol.* Ser. **67**, E. 445-464. [In Polish. English and Russian summaries.] **2717**

The authors reviewed the literature on iso-immunization in animals and described a case of abortion in a mare which as a result of serological and biological examinations was attributed to iso-immunization. Discussing the possibility of passage of the antibodies through the placenta the authors expressed an opinion that in certain pathological conditions the placenta can become permeable to incomplete antibodies. —M. GITTER.

See also absts. **2575** (rapid agglutination test for Str. agalactiae in milk); **2581** (protective antigen of B. anthracis); **2589** & **2591** (TB.); **2595-2596** (swine erysipelas); **2600** (pasteurellosis); **2605** (S. enteritidis), **2615** (effect of large doses of bacterial antigen on antibody production in new-born rabbits); **2616-2623** (brucellosis); **2624-2625** (leptospirosis); **2629** (tetanus); **2671-2672** (F. & M. disease); **2674-2676** (rabies); **2678** (pigeon pox virus vaccination against fowl pox); **2680-2681** (adsorbed vaccines); **2690** (bluetongue); **2693-2695** (swine fever); **2869** (book, bacteriology & immunity).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

MURRAY, M. D. (1957). **The distribution of the eggs of mammalian lice on their hosts. I. Description of the oviposition behaviour. II. Analysis of the oviposition behaviour of** *Damalinia ovis* **(L).**—*Aust. J. Zool.* **5**, 13-18 & 19-29. **2718**

I. Three distinct stages are described in the oviposition behaviour pattern of *Damalinia ovis, Linognathus stenopsis* and *Haematopinus eurysternue*. It is suggested that these patterns are adapted to common physical chacteristics of the environment, especially the presence of a temperature gradient.

II. In stage 1 lice were attracted to temperatures between 35° and 40°C. In stage 2 the louse orientated itself so that its head was directed to the warm end of a temperature gradient, or the saturated end of a humidity gradient. In stage 3 the orientation was reversed and a tactile stimulus from a fibre of suitable diameter, which was held against the abdomen, was then necessary for egg laying to take place. Oviposition was also influenced by high humidity, orientation to light and the presence of other ovipositing lice and eggs.—R. I. SOMMERVILLE.

VOGELSANG, E. G., GALLO, P. & MAYAUDON T., H. (1955). Elementos bacteriostaticos en las larvas de Gasterophilus. (Nota previa). **[Bacteriostatic elements in** *Gasterophilus* **larvae. (Preliminary note).]**—*Rev. Med. vet., Caracas* **14**, 41-44. **2719**

In these tests *Sarcina lutea, B. anthracis* and *Str. haemolyticus* were used. The intestines of the larvae were placed in Petri dishes sown with the bacteria. Clear zones, varying directly with the amount of intestinal contents, developed round the gut in the cultures. It is concluded that the gut of the larva contains substances which inhibit the above organisms. —T.E.G.R.

CHAMBARD, P., TAPERNOUX, A., GASTELLU, C. & MAGAT, A. (1956). Essais d'un traitement externe de l'hypodermose bovine à l'aide de préparations insecticides douées d'un pouvoir de pénétration cutanée élevé. **[Treatment of warbles with insecticide preparations which are readily absorbed by the skin.]**—*C.R. Acad. Agric. Fr.* **42**, 385-388. **2720**

Insecticides tested were pyrethrin, rotenone, malathion and a phosporic ester under the proprietary designation L 13/59. The drug under test was incorporated in a readily absorbed vehicle—a vegetable oil hydrophilized by transesterification of the component fatty acid esters. The preparation was thoroughly rubbed into the backs of animals known to have been exposed to warbles; untreated animals were kept as controls in each test. The animals were examined 45–60 days later; best results were obtained with L 13/59, the average number of warbles per animal treated being 1·22 while in controls it was 5·82. There was no significant difference with the other agents tested. —T.E.G.R.

ANON. (1957). **Systemic insecticides for livestock.** — *J. Amer. vet. med. Ass.* **130**, 125. **2721**

O, O-dimethyl O-2,4, 5-trichlorophenyl phosphorothioate, given orally to cattle in a single dose of 100 mg./kg. body wt., had no visible toxic effect, yet it killed 92 to 100% of warbles within a few days. Heavier doses (150 to 200 mg./kg.) produced signs of intoxication, but the animals recovered rapidly. The drug eliminated lice and killed biting flies for 2 or 3 days, but was not effective against internal parasites. Three days after treatment 50 p.p.m. were found in the animals' fat and after 14 days 7 p.p.m. As it was found in the milk for several days, it should not be given to dairy cows.—M.G.G.

PFADT, R. E. & DEFOLLIART, G. R. (1957). **Power dusting to control the sheep ked.**—*J. econ. Ent.* **50**, 190-194. [Authors' summary modified.] **2722**

Among nine insecticidal treatments applied with a power "duster" to control the sheep ked, the most effective was 1·5% dieldrin: a single treatment of shorn sheep in spring eradicated the infestation. Less effective were dusts of 1% dieldrin, 5% chlordane, 5% toxaphene, 1% heptachlore, 1% lindane, 0·5% rotenone, a combination of 0·5% rotenone and 0·25% gamma isomer of B.H.C. and a combination of 0·5% rotenone and 10% Lethane 60.

NEITZ, W. O. (1956). **Studies on the aetiology of sweating sickness.**—*Onderstepoort J. vet. Res.* **27**, 197-203. **2723**

An account of laboratory studies of the transmission of "sweating sickness" by *Hyalomma transiens* ticks. Large White pigs have proved to be excellent experimental subjects.

The causal agent is thought to be a "toxin" rather than a virus. The severity of the disease produced by permitting ticks to feed upon pigs,

and other species of animals, is proportional to the length of time the ticks are attached. Tick-feeding periods of 3, 4 or 5 days are followed respectively by inapparent infections, mild reactions and severe reactions with recovery. Tick-feeding periods of 6 days or longer are followed by severe reactions with 75% mortality.

Tick control measures aimed at preventing ticks feeding for longer than 2 days are discussed.

BLANC, G. & BRUNEAU, J. (1956). Étude épidémio-écologique dans la forêt de Nefifik. I. Présence chez le lapin de garenne et ses arthropodes piqueurs de virus pathogènes pour l'homme. **[Epidemiological and ecological study in a Moroccan forest. I. Presence in rabbits and their arthropod parasites of organisms pathogenic for human beings.]**—*Arch. Inst. Pasteur Maroc* **5**, 87-200. [English summary.] **2724**

The forest, which is a popular holiday resort, carries a dense rabbit population which is heavily infested with *Hyalomma excavatum* (vector of *Rickettsia burneti*), *Rhipicephalus sanguineus, Ixodes* (*ricinus*?) and *Ornithodoros erraticus* (vector of *Borrelia hispanica* and *R. burneti*). Other parasites infesting the rabbits are *Ctenocephalides canis, Spilopsyllus cuniculi* and *Xenopsylla ramesis. R. burneti, Salmonella typhi-murium,* a strain of *Pasteurella* and, *Trypanosoma nabiasi* were demonstrated in the blood of rabbits. A noteworthy feature is the fact that although the ticks heavily infest human beings they do not transmit infection, possibly because they do not attach themselves or are removed before they can do so.—T.E.G.R.

NIKOL'SKII, S. N. & GLUKHOV, V. F. (1957). **[Complications following the dipping of cattle in acaricidal emulsions.]**—*Veterinariya, Moscow* **34**, No. 2. pp. 64-68. [In Russian.] **2725**

Complications observed after dipping cattle in hexachlorane [B.H.C.]–creolin or hexachlorane – ichthyolin emulsions, were due to instability of the emulsion caused by overheating the concentrated mixture before adding to the bath, or by using water with more than 20 degrees of hardness. The complications were either dermatitis caused by the oily component or nervous symptoms caused by the B.H.C.; mortality was generally low. Employing suitable safeguards, the authors dipped 20,000 cattle in emulsions containing 0·25–0·5% B.H.C. and 1–2% creolin without complications. 700–1,000 cattle, in 4 batches, could be passed through an 18–22,000 litre bath without changing the dip.—R.M.

CLABORN, H. V., RADELEFF, R. D., BECKMAN, H. F. & WOODARD, G. T. (1956). **Malathion in milk and fat from sprayed cattle.**—*J. agric. Fd Chem.* **4**, 941-942. [Authors' summary modified.] **2726**

Eight cattle were sprayed 16 times at weekly intervals with 0·5% malathion; fat samples taken one week after the last spraying contained no detectable amounts of the insecticide. Four dairy cows were sprayed twice in one week with 0·5 or 1% malathion; 0·08–0.36 p.p.m. were found in samples of milk taken 5 hours after spraying. After 24 hours only traces were present, and after 3 and 7 days the milk was free from contamination.

BANN, J. M., DE CINO, T. J., EARLE, N. W. & YUN-PEI SUN. (1956). **The fate of aldrin and dieldrin in the animal body.**—*J. agric. Fd Chem.* **4**, 937-941. [Authors' summary modified.] **2727**

Aldrin is largely and readily converted into dieldrin in the body of beef and dairy cattle, pigs, sheep, rats and poultry. The change is apparently independent of the route of entry; it followed both oral and s/c introduction. Dieldrin is stored unchanged in the body and is recovered from the body tissues and animal products.

KOVALEV, G. K. (1957). **[Treatment of sheep scab with chlorten.]**—*Veterinariya, Moscow* **34**, No. 2. pp. 70-72. [In Russian.] **2728**

Chlorten ($C_{10}H_{12}Cl_8$) is obtained by photochemical chlorination of the alpha-pinene fraction of turpentine oil. The preparation used as an insecticide contained 65% chlorten, 20% "transformer" and 15% emulsifier. A 1% soln. of this concentrate was an effective and safe dip for the treatment of sheep scab. Optimum conditions were a dip temp. of 20° to 25°C. and 30–60 sec. exposure in the dip. This concentration of chlorten paralysed the mites within 1–4 hours and killed them after 64–80 hours. It did not penetrate the mite eggs, but larvae hatching from treated eggs soon died.—R.M.

VILORIA D., P. P. (1955). Acaros (Tyroglyphus farinae) en el tracto intestinal del canino. **[*Tyroglyphus farinae* in the intestinal tract of dogs.]**—*Rev. Med. vet., Caracas* **14**, 57-59. **2729**

Numerous worms and eggs of *Tyroglyphus farinae* were found in the faeces of a dog with

blood stained mucous diarrhoea. The condition cleared up after administration of a purgative. Samples of powdered milk on which the dog had been fed were tested on 2 dogs; 2 days later the acarus and its eggs were demonstrated in their faeces. Symptoms developed in one animal while the second showed no ill effects.
—T.E.G.R.

PARASITES IN RELATION TO DISEASE [HELMINTHS]

NOBEL, T. A. (1956). **[Histopathology of paramphistomiasis.]**—*Refuah vet.* **13,** In Hebrew: pp. 155-157. In English: p. 206. [English summary modified.] **2730**

In cattle and sheep heavy infestation with immature forms of *Paramphistomum cervi* causes loss of appetite, diarrhoea, anaemia, oedema and emaciation and, if untreated, death from exhaustion occurs in 15–20 days. The lesions are duodenitis and jejunitis. Cellular infiltration is mainly eosinophilic. The parasites penetrate deeply into the submucosa as far as the longitudinal muscular layer, but there is little or no tissue reaction around these deeply placed parasites. The adult forms of *P. cervi* are not pathogenic.

KRIVOSHTA, E. E. (1956). **[Treatment of dicrocoeliosis in sheep.]**—*Trud. novocherkassk. zoo.-vet. Inst.* **9,** 178-188. [In Russian.] **2731**

None of 32 preparations, given by mouth or parenterally, were effective against *D. lanceolatum* infestation in sheep. The preparations included: bromresorcin, chlorbutinol, chloramine, chlorbromthymol blue, dichlorhydroquinone, thiodichlordiphenylamine, dichlorthymolin, hexachlorbenzol, dichloroxyanizidin, dichloroxyquinoline, dichlorparaphenyldiamine, dichlorbetanaphthol, dichlortoluol, chlorthymol, stibophen, and many well-known anthemintics.
—R.M.

BISWAL, G. & DAS, L. N. (1956). **Observations on the treatment of nasal schistosomiasis in cattle and buffaloes in Orissa.**—*Indian vet. J.* **33,** 204-216. **2732**

In comparative field trials on some 90 cattle and buffaloes harbouring *S. nasalis*, antimony sodium tartrate effected a higher percentage of cures than "Antimosan," "Anthiomaline," and "Fouadin" (stibophen). As the infestation in buffaloes usually has no clinical manifestations, control programmes should include examination and treatment of buffaloes.
—R. N. MOHAN.

SUPPERER, R. (1957). Über die Ursachen der schweren Leberegel-Erkrankungen im Jahre 1956. **[Causes of heavy liver-fluke infestation in Austria in 1956.]**—*Wien. tierärztl. Mschr.* **44,** 107-109. **2733**

Conditions favourable to *Fasciola hepatica* occurred in the autumn of 1954, development in the snail taking 2–4 months, so that widespread infestation of pastures occurred and a high percentage of infected snails survived the winter. In early 1955 large numbers of *Fasciola* eggs hatched, leading to further widespread pasture infestation with cercariae. A repetition of such favourable conditions in 1955 led to serious fascioliasis in certain parts of Austria in 1956. S. discussed control measures against the snail host.—M. L. CLARKE.

ROHRBACHER, G. H., JR. (1957). **Observations on the survival *in vitro* of bacteria-free adult common liver flukes, *Fasciola hepatica* Linn., 1758.**—*J. Parasit.* **43,** 9-18. [Author's summary modified.] **2734**

Autoclaved liver extract at the rate of 200 ml. to 800 ml. of basic saline solution plus 10 ml. of unheated liver extract maintained bacteria-free adult *F. hepatica* in excellent condition for 3 weeks and permitted survival for 30 days. Variation in pH between 7 and 8·5 and considerable variation of inorganic constituents of the basic saline soln. did not affect survival. Data are presented which confirm Stephenson's demonstration that *F. hepatica* can apparently absorb simple carbohydrates through its cuticle [*V.B.* **22,** 455]. It survived in solns. of glucose, fructose and glycerol, and to a lesser extent in cholesterol, pyruvate and glutamic acid, but not in solns. containing galactose, sucrose, maltose, ribose or sorbitol. It can survive as long in anaerobic as in aerobic solns, but the motility, colour and shape indicate that it is primarily aerobic. Arguments are presented to support the hypothesis that, *in vivo*, *F. hepatica* lives primarily as an aerobe.

SOGOYAN, I. S. (1955). **[Pathological changes in experimental *Fasciola gigantica* infestation of sheep.]**—*Trud. armyan. nauchno-issled. vet. Inst.* **8,** pp. 155-165. [In Russian.] **2735**

Experimental acute and mild forms of fascioliasis in 23 lambs and 8 sheep dosed with live cercariae of *F. gigantica* were used for study of the route of migration of parasites and of lesions found at different stages. Nearly all the young flukes reached the liver *via* the blood

stream; only a small number of them actively penetrated the intestinal wall and entered the liver from the abdominal cavity. Very slight damage was done during passage into and through the intestinal wall. Severity of lesions in the liver was in direct proportion to intensity of infestation and to the duration of migration of parasites in the parenchyma. The general picture was that of acute traumatic hepatitis in which destruction of liver cells and haemorrhages were the main features. The liver was grossly enlarged and covered with masses of fibrin. On penetration of immature flukes into the bile ducts (3–4 months after infestation) the acute phase subsided and was followed by a chronic one characterized by proliferation of fibrous tissue and slight regeneration of the liver parenchyma. Absorption of toxic products from decomposition of dead flukes led to parenchymatous degeneration of nearly all the organs of the body.—S. TERLECKI.

SHAGINYAN, E. G. (1955). **[Mass treatment of fascioliasis in buffaloes with carbon tetrachloride.]** — *Trud. armyan. nauchno-issled. vet. Inst.* **8**, pp. 143-149. [In Russian.] **2736**

Laboratory experiments and subsequent mass treatments of fascioliasis in buffaloes in the Ararat valley proved carbon tetrachloride to be effective against *F. gigantica* infestation. The dosage 0·04 ml. per kg. body wt. was optimal, and direct injection of the drug into the rumen a safe and practical method of administration. All the animals tolerated the drug well; there was slight dullness and a drop in milk yield (40–50%), but normal yield was resumed in 7 days. Immature flukes appeared to be more resistant to CCl_4 and therefore 3–4 treatments at intervals of 10–12 weeks were necessary to kill all the parasites.—S. TERLECKI.

VARMA, A. K. (1956). **Some observations on the morphology and pathogenicity of *Moniezia expansa* (Rudolphi, 1810).**—*Indian J. vet. Sci.* **26**, 103-107. **2737**

A note on certain variations in arrangement of testes and shape of eggs as observed in a single specimen of the worm.

—R. N. MOHAN.

SWEATMAN, G. K. & PLUMMER, P. J. G. (1957). **The biology and pathology of the tapeworm *Taenia hydatigena* in domestic and wild hosts.** —*Canad. J. Zool.* **35**, 93-109. **2738**

Lambs and pigs were infected with ova from gravid proglottides of *T. hydatigena* for study of the development of cysticerci and consequent pathological changes in the hosts. Lesions in the liver of lambs were first seen as fibrotic foci 7 days after infection. Cysticerci were visible to the naked eye in haemorrhagic streaks in 10 days. Migration into the abdominal cavity from the liver and omentum took place between the 18th and 30th days. The last cysticerci in the abdominal fluid were seen 34 days after infection. Cysticerci that remained in the liver parenchyma became surrounded by caseous and fibrotic material and did not develop, while those in other locations completed their development of suckers and rostellar hooks between the 34th and 53rd days. The presence of cysts induced a variety of local reactions in lambs including areas of inflammation, small flaps of fibrotic tissue, fibrotic films on the liver, and adhesions. Freezing temperatures were found fatal to cysticerci.—A. S. GREIG.

LUKASHENKO, N. P. (1957). **[Diagnosis of trichinosis in living pigs by allergic and serological reactions.]**—*Veterinariya, Moscow* **34**, No. 2. pp. 31-32. [In Russian.] **2739**

From experiments with numerous laboratory animals, 16 artificially infected pigs (with 8 controls), and 1,606 pigs due to be slaughtered, it was found that the intradermal test was simpler and more reliable than flocculation or precipitation tests for the diagnosis of trichinosis in the living pig. Of 4 antigens tested, the most reliable was an acid-soluble protein fraction, prepared by dehydrating an alkaline extract of trichinella larvae, freed from the inactive acid-insoluble protein fraction. The dose of a 1 : 10,000 dilution of antigen was 0·1 ml., injected into the skin of the posterior surface of the ear. A positive reaction was visible 30–45 min. after injection as a reddish discoloration of the skin at the site of injection, accompanied by a swelling not less than 15 mm. diam.—R.M.

BAKER, N. F. & DOUGLAS, J. R. (1957). **The pathogenesis of trichostrongyloid parasites. II. Ferrokinetic studies in ruminants.**—*Amer. J. vet. Res.* **18**, 295-302. **2740**

The daily rate of iron turnover in the plasma of different animals was studied. In 3-month-old lambs it was 0·97 mg./kg. Of this 85% was incorporated into the r.b.c. the average life span of which was estimated at 46 days. In yearling lambs it was 0·56 mg./kg. of which 78% was incorporated into the r.b.c. whose life span was 52 days. In 3-month-old calves it was 0·81 mg./kg. of which 68% was incorporated into the r.b.c. whose life span was 54 days. In a 6-month-old steer with chronic trichostrongy-

lidosis it was 1·58 mg./kg. (3–4 times that of the controls) and it was all incorporated into the r.b.c. whose life span was 11 days. It was concluded that the ensuing anaemia in the steer was due to the shortened life span of the r.b.c. and to inhibition of the haemopoietic function of the bone marrow. The role of the parasite in these changes is discussed.—T.E.G.R.

I. Rose, J. H. (1957). **Observations on the larval stages of *Muellerius capillaris* within the intermediate hosts *Agriolimax agrestis* and *A. reticulatus*.**—*J. Helminth.* **31,** 1-16. **2741**

II. Rose, J. H. (1957). **Observations on the bionomics of the free-living first stage larvae of the sheep lungworm, *Muellerius capillaris*.** —*Ibid.* 17-28. [Author's summaries modified.] **2742**

I. The rate of development of the larvae of the lungworm *M. capillaris* is slowed down as the temperature is lowered; at 25°C. the infective stage is reached after 8 days; at 5°C. after 98 days. The differences between "pre-infective" and "infective" larvae, as described by Gerichter (1948), were confirmed. Infective larvae withstand artificial digestion, but pre-infective larvae do not. Infective larvae can survive for long periods within the foot of the snail intermediate host. Pre-infective larvae can survive for 7 days after the death of the intermediate host; infective larvae can live for 16 days. 13·5% of the slugs collected during the year were infected but in most instances only a few larvae were present in any one slug.

II. Observations on faecal pellets, herbage and soil, under natural climatic conditions, indicate that the larvae of *M. capillaris* survive for several months; the majority of them remain in the faecal pellets, and do not pass on to the herbage. In the laboratory, larvae survived for many weeks in dry faeces, but for shorter periods in wet faeces. They survived better at a low temp. range of 3° to 6°C. They exhibited a considerable degree of resistance to desiccation; some survived for a maximum of 14 days at a relative humidity of 75%. Bright sunlight rapidly killed the larvae. They survived at temperatures below freezing point. All were alive after 3 days' continuous freezing, but none were alive after 12 days.

Drudge, J. H., Leland, S. E., Jr. & Wyant, Z. N. (1957). **Strain variation in the response of sheep nematodes to the action of phenothiazine. II. Studies on pure infections of *Haemonchus contortus*.**—*Amer. J. vet. Res.* **18,** 317-325. [Authors' summary modified.] **2743**

The response of two strains of *H. contortus* to the action of small daily doses of phenothiazine presented striking differences that agreed very closely with previous findings by the authors [*V.B.* **27,** 1494]. Strain B, from a flock with a worm control problem, not only had a four to eight times higher threshold than the control strain A, against doses of 0·1–2 g., but also appeared to have a higher phenothiazine threshold than strains of *H. contortus* studied by other workers. These investigations, as well as the flock history, indicate that the prolonged and intensive use of phenothiazine has resulted in the selection or development of this strain of *H. contortus* resistant to phenothiazine.

Shanmugalingam, K. (1956). **Neoascariasis in buffalo calves in Ceylon. I. The incidence of *Neoascaris vitulorum* (Goeze, 1782) in buffaloes, cattle and goats.**—*Ceylon vet. J.* **4,** 46-50. [Author's summary modified.] **2744**

S. recorded the incidence of neoascariasis in 66 buffalo calves with special reference to the age when the faeces become "positive." He discussed the possibility of a strategic period for treating calves for elimination of the adult worms, and for controlling the spread of infection by getting rid of the worms before they attain sexual maturity. Infection of buffalo calves with *N. vitulorum* probably occurs during prenatal life. The incidence of neoascariasis in calves (*Bos* sp.) was also examined: 14 out of 68 were infested, the age-groups in which the highest incidence occurred being similar to those in buffalo calves. Ascarid eggs, similar in all respects to those found in the samples from calves, were recorded for the first time in goats in Ceylon.

Mayaudon T., H. & Pérez, V. J. (1955). Tratamiento de la anquilostomiasis y ascaridiosis canina con "Terit" Farbwerke, Hoechst A.G. [**Treatment of *Ancylostoma* and *Ascaris* infestation in dogs with "Terit", a proprietary tetrachlorethylene–piperidine compound.**] —*Rev. Med. vet., Caracas* **14,** 127-129. **2745**

The compound consists of tetrachlorethylene and two acetates of: α, α-diphenylpiperidine-propane (0·67 mg./ml. in capsule or 1·67 mg./ml. in soln.); α, α-diphenyl-γ-piperidine-(n)+butylamide (0·43 mg./ml. in capsule or 0·042 mg./ml. in soln.). Over 100 dogs of both sexes ranging in age between 2 months and 5 years were treated with good results. The drug was well tolerated and caused no ill effects.

—T.E.G.R.

AUTERHOFF, H. & ERHARDT, A. (1957). Tierexperimentelle Untersuchungen zur Frage der Testung von Wurmmitteln. **[Animal experiments for testing anthelmintics.]** — *Arzneimittelforsch.* **7**, 143. **2746**

In vitro experiments with 2, 4-dioxydesoxybenzoin had indicated a good action against ascarids, but it proved to be ineffective in dogs infested with *Toxocara* and tapeworms and in cats infested with hookworms.—R.M.

WATSON, J. M. & AL-HAFIDH, R. (1957). **A modification of the Baermann funnel technique, and its use in establishing the infection potential of human hookworm-carriers.** — *Ann. trop. Med. Parasit.* **51**, 15-16. [Authors' summary copied *verbatim*.] **2747**

A simplified modification is described of the Baermann technique for the extraction of nematode larvae from soil or faeces. The sample to be examined is placed in a wire basket suspended in the top of an ordinary urine-glass filled with warm water, and the larvae are collected after sedimentation by means of a Pasteur pipette.

SHUMARD, R. F. & EVELETH, D. F. (1957). **Piperazine citrate as an anthelmintic in sheep.** —*Vet. Med.* **52**, 225-229. [Authors' summary modified.] **2748**

Intratracheal injections of 10, 20 or 40 ml. of a 40% solution of piperazine citrate did not remove *Dictyocaulus filaria* from 15 ewes. Non-critical trials suggested that some nematodes were removed when 6 lambs were given 2·5 g. of piperazine citrate per gal. of drinking water for 6 days. In critical trials in 14 lambs with 250 to 450 mg. of piperazine citrate per kg. body wt. in the drinking water for 24 hours most of the *Nematodirus abnormalis, Bunostomum, Oesophagostomum* spp. and *Chabertia ovina,* were eliminated but not *Trichostrongylus axei, Trichuris ovis* or *Haemonchus contortus.* Drenching with the same doses did not remove *N. abnormalis* or *C. ovina* and did not as effectively remove *Bunostomum.* A further critical trial with 4 treated lambs and one control showed that the drug, administered at 450 mg./kg. for 48 hours in the drinking water, was 100% effective in 2 lambs and 67% and 50% effective in the 2 others in removing *Nematodirus.* In 3 lambs infected with *H. contortus,* 20% and 50% were removed from 2, while none was removed from the third. *T. axei* and *T. colubriformis* were not removed.

WHITNEY, L. F. (1957). **Practical test of the efficacy of piperazine citrate in pigeons.** — *Vet. Med.* **52**, 298-299. [Author's conclusion modified.] **2749**

In some 1,400 homing pigeons treated with piperazine citrate, in the drinking water at the rate of 8 g. per gal., no harmful effects were noted, even in the young squabs. The drug effectively removed *Ascaridia columbae,* but was useless against *Capillaria columbae* and coccidia, as determined by egg counts in faeces examined, before and after treatment, by the centrifuged saturated sodium nitrate solution method.

See also abst. 2699 (role of nematodes in Shope's fibroma and papilloma in rabbits).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

SNIGIREV, N. I., SERGEEVA, N. A. & NIKOLAEVA, K. G. (1956). **[Cases of squamous-celled carcinoma in horses and cattle.]** —*Trud. saratov. zoo.-vet. Inst.* **6**, 217-221. [In Russian.] **2750**

A brief account of carcinoma of the eye in 7 cows and a horse, and of carcinoma of the tail of a horse.—R.M.

LANCASTER, H. O. & NELSON, J. (1957). **Sunlight as a cause of melanoma: a clinical survey.**—*Med. J. Aust.* April 13th, 452-456. [Authors' summary modified.] **2751**

A survey to test the hypothesis that some melanomata are caused by exposure to the sun, and that those who produce little skin pigment are more susceptible than those who produce pigment readily, yielded results consistent with the hypothesis. The evidence with regard to melanoma was as strong as that concerning other cutaneous cancers.

FRIEND, C. (1957). **Cell-free transmission in adult Swiss mice of a disease having the character of a leukemia.**—*J. exp. Med.* **105**, 307-318. [Author's summary modified.] **2752**

A disease with the characteristics of a leucaemia was passaged 26 times in adult Swiss mice by means of filtrates as well as cell suspensions. The agent passed readily through Selas O3, Berkefeld N, and gradocol membrane filters, these last having an average pore size of 220 mμ. Filtrates remained stable when stored for long periods at −70°C. or when freeze-dried. The infectivity of infected splenic tissue was undiminished by massive doses of X-rays

(50,000 r). The agent was inactivated by heating to 56°C. for 30 min. and by exposure to ether or formalin. The disease can be transmitted to adult Swiss mice or DBA/2 mice, but not to adult PRI, C_3H, A, $C_{57}B1/6$ or $F_1(C_{58} \times BALB)$ mice. Intraperitoneal, subcutaneous, intracerebral and intramuscular injections are all effective.

DMOCHOWSKI, L., GREY, C. E. & BURMESTER, B. R. (1957). **Studies on submicroscopic structure of chicken lymphomatosis tumors.** —*Proc. Amer. Ass. Cancer Res.* **2,** 196. [Only abst. given. Abst. from abst.] **2753**

The cytoplasm of cells of the spleen and liver showed a progressive destruction of cell elements such as mitochondria and ergastoplasm which in turn led to disintegration of the cells. Large osmiophilic bodies were present in the cytoplasm of these cells. Within these bodies characteristic virus particles were formed which were released into the cytoplasm and, after break-up of the cells, into the intercellular spaces. The virus particles were about 900 A in diameter and contained an internal dense zone about 300 A in diam. In the spleen and liver of control healthy chickens of the same breed none of the described changes have been observed.

See also absts. **2699** (role of nematodes in Shope's fibroma and papilloma in rabbits); **2793** (diagnosis and treatment of surgical diseases of the brain).

NUTRITIONAL AND METABOLIC DISORDERS

RONÉUS, O. (1957). **Coprostasis in the spiral colon of piglets.**—*Nord. VetMed.* **9,** 362-368. [In English. German and Swedish summaries.] **2754**

A more detailed account, in English, with illustrations, of the condition previously described in a note [see *V.B.* **27,** 511]. The site of the obstruction was invariably the ventral portion of the colonic spiral in either of the two sharp flexures between the last loop of the centripetal colon and the first portion of the centrifugal colon. The condition was found in 20% of piglets which had died at 1–2 weeks of age, those affected being 3–11 days old. As a preventive measure, barley chaff should not be used as bedding for unweaned piglets.—F.E.W.

FERGUSON, G. S. (1957). **Factors affecting non-fatty-solids in milk.**—*Vet. Rec.* **69,** 407-410. [Author's conclusion modified.] **2755**

Winter feeding should be on a high plane and only foodstuffs of high quality should be used. Mastitis should be carefully controlled; even subclinical mastitis may seriously affect milk quatity. Selection of breeding stock should be based on milk records which include yields of non-fatty solids as well as of butter-fat and quantity. Cows which persistently give milk low in non-fatty solids should be culled. Reduction of the calving interval increases the content.

BOL', B. K. & VERTINSKII, K. I. (1957). **[Pathological changes in cows with a disturbance of metabolism.]**—*Veterinariya, Moscow* **34,** No. 4. pp. 57-67. [In Russian.] **2756**

The authors recognized a disease of high-yielding dairy cows characterized by sudden and irreversible drop in milk yield, infertility and other symptoms [not described in detail], and occasionally sudden death. They examined macroscopically and histologically 40 slaughtered cows, culled from herds because of this type of disorder. Earliest manifestations seen in parenchymatous organs were miliary dystrophy, fatty infiltration, reduction of tissue glycogen, and in some cases more or less widespread amyloidosis. A mesenchymal reaction in the digestive tract, liver, kidney, spleen and lymph nodes was characterized by histiocytic and lymphoid hyperplasia, inevitably ending in sclerosis. In high-yielding cows having also clear signs of osteomalacia, dystrophic changes were best seen in ganglia of the autonomic nervous system, heart muscle, liver and kidneys. Neurones of autonomic ganglia, particularly the mesenteric, were severely affected, showing pyknolysis and "shadow" cells, with consequent or simultaneous proliferation of satellite cells. Fatty dystrophy of the liver, kidneys and heart was generally not of the toxic type. A "catastrophic" reduction in liver and muscle glycogen was found only in infertile cows which had not had a full lactation for $1\frac{1}{2} - 2$ years. Intracapillary glomerulonephritis, often with obliteration of glomeruli, commonly occurred; also subclinical interstitial mastitis. It was concluded (without a discussion of differential diagnosis) that the syndrome was due to a profound disturbance of intermediate protein metabolism. The toxic action of protein bodies probably depended on stimulation of the reticulo - endothelial system, leading to sclerosis, eosinophilia, and disturbances of intracellular protein metabolism in parenchymatous cells of the principal organs. It was suggested that the condition could be prevented by reducing the amount of protein

in the ration. There are 4 plates of photomicrographs.—R.M.

SCHMIDT-NIELSEN, B., MURDAUGH, H. V., OSAKI, H. & O'DELL, R. (1957). **Urea excretion in sheep and dog.**—*Fed. Proc.* **16,** 113. **2757**

It was observed that in the camel and the sheep on a low protein diet only 1% of the urea was excreted in the urine—presumably because urea is used for protein synthesis. The same, though to a less extent, was observed in the dog. High nitrogen intake increased excretion in the dog but decreased it further in the sheep. Excretion, in the case of animals on low protein, increased with diuresis.—T.E.G.R.

WATERLOW, J. C. & BRAS, G. (1957). **Nutritional liver damage in man.**—*Brit. med. Bull.* **13,** 107-112. [Authors' conclusion modified.] **2758**

Kwashiorkor is the only form of liver injury in man in which there is evidence of a direct effect of diet on the liver. Striking though the picture is pathologically, it can hardly be called a disease, since recovery, both structural and functional, is the rule. On the other hand, deficient diets may have an indirect effect on the liver: they may predispose it to injury by other agents. Such a theory was put forward by Miller & Whipple (1940), and by Himsworth (1950); but it has to be proved. A theory of dual aetiology would unify the many pathological sequences and clinical syndromes of liver disease. But a good theory must also be verified. The functional and metabolic changes that precede structural changes and that make the liver vulnerable to injury must be established.

LONG, T. A., TILLMAN, A. D., NELSON, A. B., GALLUP, W. D. & DAVIS, B. (1957). **Availability of phosphorus in mineral supplements for beef cattle.**—*J. Anim. Sci.* **16,** 444-450. **2759**

The effects of phosphorus supplements on feed consumption, weight gain and inorganic phosphorus in the plasma were studied in steers fed: a low-phosphorus ration (0·07 and 0·09%); and, rations supplemented with NaH_2PO_4 to provide 0·11–0·19% total phosphorus. Feed intake, weight gain and plasma phosphorus increased with increased phosphorus supplements; the plasma phosphorus was highly sensitive to changes in phosphorus intake. The low-phosphorus ration supplemented with 0·08% phosphorus (derived from steamed bone meal, Curaçao Island phosphate and dicalcium respectively) produced similar effects. In heifers on 0·07% phosphorus ration there was a decrease in the feed intake and plasma phosphorus and the weight gain was small.

—T.E.G.R.

GUBLER, C. J., CARTWRIGHT, G. E. & WINTROBE, M. M. (1957). **Studies on copper metabolism. XX. Enzyme activities and iron metabolism in copper and iron deficiencies.**—*J. biol. Chem.* **224,** 533-546. [Authors' summary modified.] **2760**

A study was made of the influence of copper and iron deficiencies on the haemin chromoprotein, Cu, Fe, and enzyme content of the blood and various tissues of pigs, and on the size of various organs. In general, Fe deficiency resulted in a decrease in the haemin chromoprotein content of the blood and tissues. Cu deficiency was associated with a decrease in concentration of haemin chromoproteins only when an increased requirement was evident, as indicated by increased turn-over or a disproportionate increase in tissue mass. In the heart, both the concentration and the total content of cytochrome *c* as well as the total content of myoglobin were increased in pigs deficient in Cu. Cytochrome oxidase activity was not influenced by Fe deficiency but was markedly reduced in Cu deficiency. Liver catalase activity was decreased both in Fe and in Cu deficiency. The butyryl coenzyme A dehydrogenase activity in liver homogenates was not altered by Cu deficiency. The content of glutathione in the liver was decreased in Cu deficiency and normal in Fe deficiency. The r.b.c. concentration was increased both in Fe and in Cu deficiency, but the content of the individual r.b.c. was only moderately increased in Cu deficiency and was normal in Fe deficiency. The excretion of uric acid allantoin was normal in Fe deficiency. In Cu deficiency, an increase in allantoin and a relatively greater increase in uric acid excretion were found. This resulted in a 2·5-fold increase in the ratio of uric acid to allantoin excreted. The Cu content of the tissues was very low in pigs deficient in Cu and normal or high in pigs deficient in Fe. Total tissue Fe was moderately reduced and haemoglobin Fe markedly reduced in Cu deficiency. There was a marked reduction in both Fe compartments in Fe deficiency. Total iron per kg. body wt. in pigs deficient in Cu did not differ greatly from that in pigs deficient in Fe. Fe deficiency was associated with a 50% increase in heart wt. relative to body wt. The other organs were not affected. Cu deficiency resulted in a marked (200%) increase in heart wt. and a moderate increase in liver and kidney

wt. relative to body wt. The other organs were not affected.

VENKATACHALAM, P. S. & KALDOR, I. (1957). **Studies on intermediary iron metabolism. IX. The effects of partial hepatectomy in rats.**—*Aust. J. exp. Biol. med. Sci.* **35**, 25-30. [Authors' summary modified.] **2761**

Young male albino rats were depleted of a large proportion of their stored iron by the combined operation of partial hepatectomy and splenectomy. Nine days later the liver had regained its preoperative weight, but its stored iron content was still only half the preoperative value. Twenty days after operation, however, the stored iron content of the regenerated liver had risen to the preoperative level. The results of measurements of haemoglobin, serum protein, serum iron and iron binding capacity are given, and various possibilities for the source of stored iron in the regenerated liver are discussed.

BERESFORD, C. R., GOLBERG, L. & SMITH, J. P. (1957). **Local effects and mechanism of absorption of iron preparations administered intramuscularly.**—*Brit. J. Pharmacol.* **12**, 107-114. [Authors' summary modified.] **2762**

An attempt was made to correlate factors affecting the absorption of iron-polysaccharide complexes administered i/m. Different complexes varied greatly in degree of retention in muscle and in diffusibility in agar; these two characteristics were not closely related. The local changes produced in muscle were an acute inflammatory reaction at the site of injection, with degenerative changes. Regeneration was rapid and complete. Most of the absorption occurred during the initial 72 hours and appeared to be mediated partly by the inflammatory reaction evoked, with enhancement of lymphatic transport of the iron complex. Rapid fixation by tissue macrophages impeded absorption and, with some complexes, this factor may render much of the injection unavailable.

COUCH, J. R., KURNICK, A. A., REID, B. L. & SVACHA, R. L. (1957). **Molybdenum in chick and poult and in avian nutrition.**—*Fed. Proc.* **16**, 383. **2763**

The addition of molybdenum to the diet of chicks and poults at 4 weeks stimulated growth. Results observed when the diet was supplemented with molybdenum, distillers' dried solubles or their ash were: a significant increase in the xanthine dehydrogenase of the liver and intestines; a positive correlation of 0·955 between liver molybdenum and xanthine dehydrogenase activity; and, an increase in the molybdenum content of the bones and liver. The percentage bone ash was not affected.—T.E.G.R.

RENDIG, V. V. & WEIR, W. C. (1957). **Evaluation by lamb feeding tests of alfalfa hay grown on a low-sulfur soil.**—*J. Anim. Sci.* **16**, 451-461. **2764**

Feeding experiments indicated that lucerne grown on low-sulphur soil was improved by the use of fertilizers containing sulphur. The addition of methionine to lucerne hay low in sulphur did not improve its feeding value. Accompanying changes in the composition of the lucerne appeared to have a greater effect on the feeding value than the changes in the sulphur content. It is considered that the nutritional value of the hay is not determined by any particular chemical fraction. Results confirm the previous finding that a low sulphur intake is reflected in the level of inorganic sulphur in the blood of sheep.—T.E.G.R.

WEITZEL, G., ROESTER, U., BUDDECKE, E. & STRECKER, F. -J. (1956). Zinkgehalt und blutzuckersteigernde Wirkung von Organextrakten. **[Zinc content of organ extracts and its effect on the blood-sugar level.]** — *Hoppe Seyl. Z.* **303**, 161-175. [English summary.] **2765**

Pancreas from calf foetuses had a considerably higher zinc content than that from adult cattle and the hyperglycaemic effect of foetal pancreatic extract was much higher than that from adult cattle. Dog prostate gland contained comparatively large amounts of zinc but prostatic extract had no hyperglycaemic effect.

—E.G.

O'DELL, B. L. & SAVAGE, J. E. (1957). **Symptoms of zinc deficiency in the chick.**—*Fed. Proc.* **16**, 394. **2766**

Better growth was obtained when 6·6 p.p.m. zinc, 56 p.p.m. zinc, or 5% distillers' dried solubles was added to a basal diet containing about 50 p.p.m. zinc. On the basal diet the average weight of the chicks at 4 weeks was less and the long bones were shorter and thicker than in the case of chicks on supplemented diets. Haematocrit values were low in all groups. The addition of zinc to a casein or alpha protein type diet elicited no response.—T.E.G.R.

DAY, P. L., YOUNG, D. E. & DINNING, J. S. (1957). **Biochemical effects of vitamin E**

deficiency in monkeys.—*Fed. Proc.* **16,** 383-384. **2767**

Skeletal muscle and bone marrow were principally affected and the deoxyribonucleic acid (DNA) content of skeletal muscle was increased (and returned to normal in recovered animals); the ribonucleic acid (RNA) content of skeletal muscle was not affected. The RNA and DNA contents of the marrow were greatly increased and the RNA/DNA ratio was higher. These changes were reversed by treatment with α-tocopherol. Incorporation of formate-C^{14} into the nucleic acids of skeletal muscle and bone marrow was greatly increased. Vitamin E therapy reversed this effect completely in bone marrow but only partially in skeletal muscle. The creatine content of skeletal muscle was reduced by about 50% and was not completely restored to normal by α-tocopherol. Heart creatine was not markedly affected.

—T.E.G.R.

MAHADEVAN, V. (1957). **"Leg disorder in cockerels."**—*Indian vet. J.* **34,** 87-100. **2768**

M. described a form of leg weakness, accompanied by blackening of feather tips, in Rhode Island Red cockerels, 10–20 weeks old, but not in pullets. The condition was cured by additional supplements of vitamins A, D and E; and it was concluded that, since they grew faster than pullets between 10 and 20 weeks, the cockerels needed more of all these vitamins.

—R. N. MOHAN.

PELLEGRINI, S. (1956). Effetti della somministrazione di metiltiouracile sull'aspetto cytologico dell'adenoipofisi del cane. **[Effect of methylthiouracil on the histology of the anterior pituitary gland in the dog.]**—*Acta med. vet., Napoli* **2,** 531-553. [English and French summaries.] **2769**

The effect of the drug on the β-basophile cells of the anterior pituitary gland of 1-year-old dogs was studied. A dose of 0·2 g. every 3 days for 1 month caused hypertrophy of the cells with high granule content. The same dose daily for 1 month caused disappearance of the granules of the β cells in certain areas of the gland while only slight changes were observed in the cells of other areas where the granule content was high. The same dose daily for 3 months caused complete disappearance of the granules of all the β cells.—T.E.G.R.

HEMSLEY, L. A. (1957). **Some observations on milk fever.**—*Vet. Rec.* **69,** 464-468. [Author's summary modified.] **2770**

Clinical and biochemical data for 67 cases of milk fever are discussed. It was not possible to correlate symptoms with the mineral content of the blood. Unsatisfactory response to treatment was seen in 27 cases, of which 20 were cases of clinical relapse. The prophylactic use of dihydrotachysterol is mentioned.

ROGERS, T. A. & KLEIBER, M. (1957). **Milk fat synthesis from acetate in mammary gland of the cow.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 705-708. [Authors' summary slightly modified.] **2771**

2-C^{14} labelled acetate was injected into the milk cistern of the right front quarter of a lactating cow. This quarter was subsequently milked separately from the other 3 and the radioactivity of the milk fat constituents from each was determined. The data confirm that there is a delay of several hours between synthesis and secretion of milk fat. A surprisingly small amount of the injected acetate diffused into the other 3 quarters or into the rest of the body. This can be accounted for by its rapid utilization for milk synthesis near the site of injection. Fatty acids of all chain lengths and glycerol seem to be synthesized from acetate in the mammary gland. The glycerol synthesis, however, is on a smaller scale.

ADLER, J. H., ROBERTS, S. J. & STEEL, R. G. D. (1957). **The relation between reactions to the Ross test on milk and urine and the degree of ketonemia in dairy cows.**—*Cornell Vet.* **47,** 101-111. **2772**

The Ross test on milk and urine is a modification of Rothera's test. Strong reactions in milk were consistently associated with high blood ketone levels while weaker reactions in milk included ketonaemic values that are considered normal. It is concluded that a positive reaction in milk is more strongly indicative of a high ketonaemic level than a positive reaction in urine.—J. A. NICHOLSON.

See also absts. **2774** (nutritional deficiencies in livestock); **2867** (report, Australia).

DISEASES, GENERAL

I. ANON. (1956). **Improving livestock through breeding. Animal climatology. In "Recent** developments affecting livestock production in the Americas". [F.A.O. Agricultural Development Paper No. 55.] pp. 5-21. **2773**

II. ANON. (1956). **Improving livestock pro-**

duction through improved nutrition and management. Nutritional deficiencies in livestock.—*Ibid.* pp. 83-98. **2774**

III. ANON. (1956). **Improving livestock production through better disease and parasite control. Control of foot-and-mouth disease.** —*Ibid.* pp. 99-104. **2775**

IV. ANON. (1956). **Improving livestock production through better disease and parasite control. Control of brucellosis.**—*Ibid.* pp. 104-110. **2776**

I. The purpose of this report on the third F.A.O. meeting on livestock production, held in Buenos Aires in April 1955, was to supply member countries with information on planning and implementation of livestock improvement programmes. Details are given of studies on the effect of hot climates on performance in farm animals, carried out at the Inter-American Institute of Agricultural Sciences at Turrialba, Costa Rica, the Agricultural and Mechanical College of Texas, The Johns Hopkins University, Baltimore, the universities of Missouri, Illinois, Louisiana, North Carolina and California, and some experimental stations of the U.S. Department of Agriculture. Further, there is information on work carried out in Columbia, Peru and the Argentine on the effects of high altitudes. Adaptation of breeds to unfavourable environment was studied in Columbia and Panama. Maps were prepared by some South American states showing distribution of certain breeds and types of livestock, vegetation and climatic conditions, presenting certain correlations between environmental factors and growth, milk and wool production etc.

II. A vitamin deficiency in ruminants in the Argentine was reported, caused by a diet of *Cynodon hirsutus* and *C. dactylon*. HCN, produced by these grasses, appears to destroy the micro-organisms synthesizing vitamins of the B complex. The conditions responded to injections of the above mentioned vitamins. Further details are given of urolithiasis, grass tetany, hypomagnesaemia, ketosis, vitamin, iodine and cobalt deficiency. A disease called "enteque seco" responded to treatment with sodium acid phosphate and manganese sulphate.

In Brazil, conditions in cattle known by various local names may be zinc, copper or cobalt deficiencies. Nutritional sterility was studied in cattle in Minas Gerais, where emaciation, known by many local names, responded to copper sulphate medication.

Deficiency of vitamins A and D was reported from Chile, osteoporosis, osteomalacia, and goitre in sheep, from Ecuador. Mineral deficiencies were also reported from Salvador, Guatemala, Haiti, Honduras, Mexico, Surinam, Paraguay and Peru. Pasture improvement was carried out in British Guiana. In Jamaica, "Manchester Wasting Disease", believed to be identical with "enteque seco" of Argentina, occurred in limited areas.

In the U.S.A. work on animal nutrition was intensive, aided by federal and state agricultural extension services and private organizations. The U.S. Research Council sponsored research to increase knowledge in the field of nutritional requirements of livestock.

III. From the Argentine it was reported that control of F. & M. disease by periodic vaccination every 4 months, restriction of movement and sanitary police measures was effective. Vaccine production by private and semiprivate laboratories is controlled by the National Foot and Mouth Disease Institute, where research on various aspects of the disease is being carried out. Canada, where the stamping-out method is employed, has been free from the disease since 1952. In Chile the control programme included vaccination every 6 months for 2–3 years, depending on the incidence of the disease, livestock traffic control, quarantine etc. El Salvador was free from the disease and no facilities for dealing with possible outbreaks exist. Panama, at present free from the disease, arranged educational campaigns to acquaint livestock owners with symptoms of F. & M. disease and other vesicular diseases and their control. In Peru, where vaccination of imported cattle is carried out, the disease is no longer a problem. Jamaica, at present free from the disease, has a control-by-slaughter programme. The U.S.A. has been free from the disease since 1929. Control measures include slaughter, disinfection and restriction of movement of livestock and people. In Venezuela, where there is a F. & M. Disease Department in the Ministry of Agriculture, control measures include vaccination, slaughter, sanitary police measures and restriction of movement. The Pan-American Sanitary Bureau maintains a F. & M. Disease Centre in Rio de Janeiro, the purpose of which is to assist member countries and to compile information on F. & M. disease and other vesicular diseases in Central and South America.

IV. Incidence of brucellosis in dairy cattle in the Argentine was studied by the ring test, whilst whole blood agglutination tests were carried out in abattoirs, packing stations etc. Premiums for brucellosis-free herds are contemplated as inducement to farmers. Calfhood vaccination with Strain 19 was the control method

of choice, but stamping out is being considered in some areas. An educational scheme with field demonstrations was carried out. Details are given of import regulations relating to reactions to the agglutination test in vaccinated animals. In Canada where brucellosis is not a notifiable disease, control is by calfhood vaccination. Serum agglutination testing is compulsory for imported animals, animals for export, herds under the attested brucellosis-free herd scheme and for livestock at certain agricultural shows. Publicity pamphlets are distributed periodically. In Chile the control scheme is on similar lines. In Salvador there is no official control legislation and import of brucella vaccines is prohibited. In Jamaica, brucellosis is not notifiable and there is no legislation concerning control. Limited use is being made of Strain 19 vaccine. In Peru control is on similar principles as in the Argentine. In the U.S.A. there is an extensive control scheme in operation, combining systematic serological examination, slaughter of reactors, disinfection and calfhood vaccination. Extensive research on immunological problems is in progress. The necessity for standardization of antigens among member countries is stressed.

—E.G.

BEATON, W. G. (1957). **Four years of organised inter-territorial animal disease reporting and analysis in Africa south of the Sahara.**—*Bull. epiz. Dis. Afr.* **5,** 15-20. [In French pp. 61-67.] [Author's summary copied *verbatim*.] **2777**

A scheme for the rapid reception and distribution of information on the incidence of 28 animal diseases prevalent in Africa and its application is explained. The value of the system which has now been in regular use for four years is discussed.

I. EVANS, C. LOVATT, ROSS, K. A., SMITH, D. F. G. & WEIL-MALHERBE, H. (1957). **A physiological explanation of equine tropical anhidrosis.**—*J. Physiol.* **135,** No. 2. pp. 41P-42P of Proceedings. **2778**

II. EVANS, C. LOVATT (1957). **The situation of the skin lymphatics concerned with adrenaline sweat tracking in the horse.**—*Ibid.* pp. 42P-43P of Proceedings. [Only absts. given. Absts. modified.] **2779**

I. Many imported thoroughbreds develop a "dry-coat" condition shortly after exposure to hot, moist climates. The anhidrosis comes on gradually, affecting the body, thigh, croup and shoulder first, and the neck, perineum and brisket last; even in bad cases it is not complete. Recovery occurs slowly on transference to a cooler, drier climate. The condition is preceded by prolonged profuse sweating. The adrenaline content of the plasma of racehorses in Malaya is higher than in England, and in resting dry-coat horses is at a level which would cause profuse sweating in England; it is not significantly increased by exercise as it is in England. The adrenaline content of the adrenals which were examined, and the adrenaline-noradrenaline ratio, were not significantly changed.

Dry-coat horses are less sensitive to adrenaline, either i/v or i/d, than free-sweaters or horses in England, and parts of the body are quite unaffected by it. Partial dry-coat can be rendered almost complete by i/v adrenaline injections.

It is concluded that the condition is a result of prolonged stimulation of the sweat glands by adrenaline, their normal humoral stimulant, secreted as a response to the hot, moist climate, and to which the glands in many animals become accommodated [see *V.B.* **27,** 1571].

II. By i/d injection of iron dextran ("Imferon"), and development in acid ferrocyanide-formalin (Turner-Warwick, 1955), more permanent preparations may be made than by the use of T 1824. The lymphatics involved in the adrenaline sweat tracking can then be recognised histologically, and are seen to be relatively large vessels lying about 3 mm. below the surface of the skin in the fixed preparation, at about the same depth as a plexus of small blood vessels, and about 1–2 mm. beneath the sweat gland layer.

MAQSOOD, M. (1957). **Thyroid therapy of non-sweating in equines.**—*Indian vet. J.* **34,** 127. **2780**

Iodinated casein, administered daily for 4–8 days in doses of 10–25 g., induced sweating in anhidrotic horses.—R. N. MOHAN.

CORNELIUS, C. E. & WHEAT, J. D. (1957). **Bromsulphalein clearance in the horse.—A quantitative liver function test.**—*Amer. J. vet. Res.* **18,** 369-374. [Authors' summary modified.] **2781**

The mean fractional clearance (K) for controls between 5 and 12 min. after the i/v inj. of bromsulphalein is $0{\cdot}255 \pm 0{\cdot}05$. The mean half-time ($t\frac{1}{2}$) for disappearance of the dye is $2{\cdot}81 \pm 0{\cdot}5$ min. By extrapolating the semilog plot of dye disappearance to zero time, the plasma volume can be estimated. From the slope (k) of the logarithmic plot, $t\frac{1}{2}$ and K

are calculated. The product of the plasma volume (V) and the fractional clearance is the clearance (c) expressed as ml. of plasma per min. Variation in the quantity of dye injected between 1·5 mg./kg. and 6·3 mg./kg. does not alter the fractional clearance. Significant quantities of the dye appeared in the bile 12 min. after i/v inj. Horses with confirmed diffuse liver disease exhibited decreased fractional clearance (increased half-times).

WITHERS, F. W. (1957). **Wastage and disease incidence in dairy herds.**—*Vet. Rec.* **69,** 446-453. **2782**

This survey of dairy herds in Surrey, Berkshire and Wiltshire during 1952–54 followed the pilot survey of 1951–52, to which reference is frequently made in this report for purposes of comparison. The information is given in tabular form. In the first survey 170 herds comprising 5,984 cows and in the second 132 herds comprising 4,879 cows were investigated. Mortality remained fairly steady between 1·1 and 1·5% during the years 1950–51 to 1953–54. Causes of death in order of frequency were: parturition (injuries, milk fever etc.), bloat, grass tetany, acute mastitis and summer mastitis; other causes included accidents, traumatic pericarditis, pneumonia, poisoning, anthrax and Johne's disease; about 10% of all deaths were undiagnosed. Disposals for reasons of old age, infertility and poor yield during the 4 years 1950–51 to 1953–54 were 10·4, 11·7, 11·6 and 9·7%. Under the heading disease and accident during the 4 years disposals of: reactors to the tuberculin test were 4·5, 1·6, 1·0 and 2·7%; Johne's disease, 1·0, 0·8, 0·9 and 0·8%; other sickness and accidents, 8, 5·4, 5·4 and 7·8%. There was a steady increase in disposals due to other sickness and accidents; this, in 1953–54, was mainly due to a serious outbreak of summer mastitis. The total herd wastage for each of the 2 years under review was 18·1 and 18·7%; surplus disposals were 4·8 and 3·3%; and total deaths and disposals were 22·9 and 22%. Causes of wastage associated with parturition and other disease conditions are tabulated collectively and each condition or disease is then analysed individually on a statistical basis. In all there are 29 tables each followed by explanatory notes.—T.E.G.R.

LEMCKE, R. M., BELLIS, D. B. & HIRSCH, A. (1957). **Preliminary observations on the relation of *Escherichia coli* to gut oedema of baby pigs.**—*Vet. Rec.* **69,** 601-603. [Authors' summary modified.] **2783**

In an outbreak of oedema disease in young pigs in a herd, strains of β-haemolytic *E. coli* were isolated from all the affected pigs. Pure cultures of these organisms were pathogenic for mice and pigs. An *E. coli* antiserum protected mice if administered before the injection of *E. coli* cultures. This antiserum was effective for pigs with the naturally occurring disease only if administered at a certain stage of the disease. Under these conditions mortality was reduced from 35 to 9%. This stage was shown to coincide with the development of a hypersensitivity to *E. coli* antibodies. Pigs had to be desensitized with small doses of antiserum to prevent "reversed passive anaphylaxis." The sensitivity of the pigs was shown to be specific to the *E. coli* antibodies. [See also *V.B.* **27,** 1672 & 1673].

GITTER, M. & LLOYD, M. K. (1957). **Haemolytic *Bact. coli* in the "bowel oedema" syndrome. II. Transmission and protection experiments.**—*Brit. vet. J.* **113,** 212-218. **2784**

The syndrome of oedema disease, with typical clinical symptoms and P.M. findings, was reproduced in pigs by i/v injection of extracts of intestinal contents of naturally infected pigs; serial transmission was not achieved. Neither live cultures of a strain of haemolytic *E. coli* nor an immune serum immunized pigs against the extract. Mice were not protected by the immune serum and i/v injection of a bacterium-free filtrate of the extract was lethal to them. The haemolytic *E. coli* which was constantly recovered in pure culture from the intestinal tract of pigs which died in a field outbreak was not demonstrable in the test pigs.—T.E.G.R.

LUDVIGSEN, J. (1957). Komplikationer i forbindelse med "stress"-tilstande hos svin. **[Complications in connexion with "stress"-conditions in pigs.]** — *Medlemsbl. danske Dyrlaegeforen* **40,** 182-193. **2785**

L. discussed so-called "muscle degeneration" (muscular dystrophy) of pigs in the light of Selye's adaptation theory. The Danish Landrace breed, during 50 years of selective breeding for economic characters, has undergone a gradual change in hormonal balance, the activity of the thyroid and adrenal glands having decreased, probably as a result of increased activity of growth hormone. During the last 2 years the flesh of pigs bred at the three permanent experimental stations has been adjudged by its colour: about 10% of the experimental pigs had a colour rating corresponding to total muscular dystrophy, and in all

42% had lighter coloured carcass meat than desirable.—F.E.W.

MENGES, R. W. & HABERMANN, R. T. (1957). **A paralytic syndrome in two dachshunds.**—*Cornell Vet.* **47,** 241-254. [Authors' summary copied *verbatim.*] **2786**

Efforts to determine the etiology of a paralytic syndrome in two dachshunds were unsuccessful. Clinical symptoms of the disease and pathological changes noted are described.

KÓŇA, E. & BELOBRAD, G. (1956). Príspevok k výskytu enzootickej srdcovej mŕtvice sliepok. **[Round heart disease in chicks.]**—*Vet. Čas.* **5,** 390-394. [In Slovak. German and Russian summaries.] **2787**

An outbreak of round heart disease on a farm was described. Of 600 chicks, 2–14 weeks old, 170 died between the middle of March and beginning of August. There were no losses in adult fowls. Histologically heart lesions resembled those described by Blaxland & Markson [*V.B.* **18,** 1132]. Investigations failed to reveal an infective agent, parasite or inorganic poison. It was, however, stated that the birds were fed mouldy maize meal and that soon after this was substituted by clean barley meal the outbreak subsided.—E.G.

WOOLLAM, D. H. M., PRATT, C. W. M. & FOZZARD, J. A. F. (1957). **Influence of vitamins upon some teratogenic effects of radiation; an experimental study.** — *Brit. med. J.* May 25th, 1219-1221. [Authors' summary copied *verbatim.*] **2788**

The effect of the combined administration to pregnant rats of vitamins A, B, C, D, and E upon the incidence of anophthalmia produced in the embryo by subsequent *x*-radiation has been studied. The incidence of anophthalmia in the group receiving radiation and vitamins (37·4%) is in strong contrast with that in the group receiving radiation alone (10·8%).

LUSHBAUGH, C. C. & SPALDING, J. F. (1957). **The natural protection of sheep from external *beta* radiation.**—*Amer. J. vet. Res.* **18,** 345-361. **2789**

Investigations of a skin disease of sheep in Utah, originally attributed to beta radiation from atomic bomb tests in Nevada, led to the conclusion that the condition was a severe form of infectious pustular dermatitis causing irregular destruction of skin structures and progressive atrophy of the arrectores pilorum muscles. The maximum dose of integrated beta radiation to which the sheep had been exposed was 10–15 rep. In experiments the threshold dose for epilation of sheared, of normally wooled and thickly wooled sheep was: 2,500–5,000; 5,000–10,000; and 10,000–15,000 respectively. For lesions similar to those under investigation a dose of 50,000–100,000 rep. would have been required.—T.E.G.R.

KULP, J. L., ECKELMANN, W. R. & SCHULERT, A. R. (1957). **Strontium-90 in man.**—*Science* **125,** 219-225. [Authors' summary modified.] **2790**

The average content of strontium-90 in man throughout the world was about 0·12 micromicrocurie per g. of calcium (1/10,000 of the maximum permissible concentration) in the autumn of 1955. A few values as high as 10 times the average were obtained. This value is in accord with that predicted from fallout measurements and fractionation through the soil–plant–milk–human being chain. With the present burden of strontium-90, this average level should rise to 1 to 2 micromicrocuries of strontium-90 per g. of calcium by 1970.

KUMSIEV, S. A. (1957). **[Hydrotherapy in animals with stomach disorders.]**—*Veterinariya, Moscow* **34,** No. 1. pp. 49-59. [In Russian.] **2791**

K. studied the effects on gastric secretion and motility of administration by stomach tube of from 2 to 10 litres of water at different temperatures to 32 horses and 47 ruminants. Some of the animals were provided with ruminal or duodenal fistulas. Water at 37°C. caused a change in gastric secretion, the nature of which depended on the state of the nervous system of the animal. Cold water (5° to 15°C.) in small and medium doses inhibited gastric secretion, while large doses reduced body temp. Warm water (45° to 47°C.) often inhibited secretory activity at the moment of contact. Water at 50° to 55°C. caused thermal irritation, resulting in activation of the stomach and the discharge of mucus.

When water at 37° or 5° to 10°C. was introduced under pressure, it caused contraction and increased the tone of the stomach at the moment of contact. In order to utilize this effect in the treatment of gastric disorders, a special stomach tube and pump was devised; treatment consisted of the introduction of 4–6 l. water on 2–6 occasions. Cold water was used in febrile conditions.—R.M.

WALSHE, J. M. (1957). **Hepatolenticular degeneration (Wilson's disease).**—*Brit. med.*

Bull. **13**, 132-135. **2792**

This is one of several papers in a symposium entitled "The liver: some physiological and clinical aspects". The author reviews present knowledge on the clinical syndrome, the biochemical lesion, diagnosis and treatment of Wilson's disease in man. It is a disease of interest to comparative pathologists and biochemists. Wilson, in 1912, described the association of hepatic cirrhosis with symmetrical lenticular degeneration. The disease is rather rare, becomes manifest in children or young adults, and has a familial incidence. The lesion in the liver may be either a diffuse fibrosis or post-necrotic scarring, or both. There is an increase in the copper content of the liver and of the brain, but the total plasma copper is low. A large amount of copper is excreted in the urine, frequently in association with an aminoaciduria. More recently it was found that ceruloplasmin was deficient or absent, and that the unbound copper in the plasma is about threefold above normal. Several hypotheses on the pathogenesis have been advanced. The one most acceptable is that the primary biochemical defect is a failure to synthesize ceruloplasmin, and this is associated with an excess absorption of copper from the gut. Copper thus becomes loosely complexed to albumin which allows it to be deposited in the tissues, particularly in the liver and in the brain. The author gives a clear review with references to literature.—L. B. Bull.

Überreiter, O. (1956-57). Beitrag zur Diagnostik und Therapie der chirurgischen Krankheiten des Gehirns und seiner Häute. I. Mitteilung: Allgemeines, Verletzungen, Entzündungen. II. Mitteilung: Raumfordernde Prozesse: Tumoren, Pseudotumoren, Parasiten. **[Diagnosis and treatment of surgical diseases of the brain and its membranes. I. Injury and inflammation. II. Tumours, pseudotumours and parasites.]** — *Schweiz. Arch. Tierheilk.* **98**, 321-351; **99**, 51-99. [English, French and Italian summaries.] **2793**

I & II. A detailed and illustrated account based on the author's experiences, with references to the literature, forming a valuable revision of the subject. Neoplasms are particularly well described, and there is a tabular summary of 195 neoplasms of the central nervous system of domesticated animals reported by other authors, and 30 seen by Überreiter.

—R.M.

See also absts. 2870 (book, infectious diseases of swine); 2873 (neuropathology of man and animals).

POISONS AND POISONING

Hammond, P. B. & Sorensen, D. K. (1957). **Recent observations on the course and treatment of bovine lead poisoning.**—*J. Amer. vet. med. Ass.* **130**, 23-25. **2794**

The use of calcium versenate (the calcium disodium salt of ethylenediaminetetraacetic acid) in the routine treatment of lead poisoning in cattle is reported. The drug was given diluted with normal saline or 5% glucose solution, twice daily at the rate of 30–50 mg. per lb. body wt. on an intermittent basis. Blood examinations showed that basophilic stippling of erythrocytes is associated with lead poisoning and that the administration of calcium versenate is followed by a pronounced fall in the lead content of the blood. In animals which recovered, ten days to two weeks of intermittent treatment was generally required.—J. A. Nicholson.

O'Moore, L. B. (1956). **Copper as a nutritional hazard on the farm.**—*Irish vet. J.* **10**, 225-226. **2795**

Three calves, aged 3–6 weeks, died 12–36 hours after symptoms which included jaundice, weakness and incoordination of movement. P.M. examination revealed liver copper values of around 2,000 p.p.m. and the deaths are considered to be due to acute copper poisoning. Some months previously the walls of the calf house had been sprayed with a solution containing 2 lb. commercial $CuSO_4$ in 3 gal. water; and, as the calves had not been muzzled, it is presumed that intoxication arose as a result of licking the walls.—J. A. Nicholson.

Boddie, G. F. (1957). **"Fluorine alleviators." II. Trials involving rats.**—*Vet. Rec.* **69**, 483-488. [Author's summary modified.] **2796**

B. described a series of feeding trials with rats designed to test the long-term effect of feeding fluorine alleviators. The criterion of efficacy employed was the extent to which the uptake of ingested fluorine in bone was depressed by the alleviator. Three concentrations of sodium fluoride (50, 100 and 250 p.p.m.) were used. In the earlier trials the alleviator, calcium carbonate as 5% of feeding chalk in the diet, depressed the storage of fluorine compounds in the rat skeletons. In the group of rats receiving 250 p.p.m. sodium

fluoride and 5% chalk the increase of fluorine content compared to the basal group was less by 50·5% than that of the controls receiving 250 p.p.m. of sodium fluoride. "Calcium aluminate" (equal parts of calcium carbonate and aluminium oxide) was much more effective than calcium carbonate alone, being highly effective. Further confirmation of this degree of effectiveness is required. These trials made it possible to define some of the factors governing the build-up of fluorine concentrations in bone.

BENTZ, H. & HERDMANN, I. (1957). Vergiftungsfall bei Rindern durch chloriertes Naphthalin. **[Poisoning in cattle by chlorinated naphthalene.]** — *Arch. Toxikol.* **16**, 261-263. **2797**

Hyperkeratosis in cows on a small farm was traced to harness improvised from discarded driving-belts, which were found to be impregnated with a material containing chlorinated naphthalene (61% chlorine).—R.M.

DOWE, T. W., MATSUSHIMA, J. & ARTHAUD, V. H. (1957). **The effects of corn treated with fungicides upon the performance of fattening steers.**—*J. Anim. Sci.* **16**, 93-99. [Authors' summary modified.] **2798**

Of 33 yearling steers, 15 were fed rations containing "Arasan", 14 were fed rations containing "Orthocide" [captan] and 4 served as controls. After 140 days they were slaughtered. No toxic effects were noted. "Arasan" depressed food consumption, but "Orthocide" did not. There were no significant differences in weight gain. The steers tolerated 725 mg. of captan per 100 lb. body wt. daily; food consumption was depressed, but gains and the efficiency of food utilization were not. It is suggested that maize treated with "Arasan" be processed or mixed with uncontaminated grains so that not more than 125 mg. of tetramethyl thiuram disulphide per 100 lb. body wt. will be ingested daily.

RADELEFF, R. D. & WOODARD, G. T. (1957). **The toxicity of organic phosphorus insecticides to livestock.**—*J. Amer. vet. med. Ass.* **130**, 215-216. **2799**

The authors studied in cattle and sheep the effects of oral doses and spray and dip treatments with 20 organic P insecticides. A compound was classified as toxic if it caused any observable deviation in behaviour. For many compounds the lethal, toxic and non-toxic oral doses are given and similar information is presented on the percentage of insecticide in spray or dip.

In poisoned animals the first signs are excessive salivation, dyspnoea and restless wandering with stiff gait. Fasciculations of all skeletal muscles are present and exhaustion forces the animal to lie down. As death, which appears to occur by suffocation, approaches there are pulmonary râles and the animal grunts softly. Convulsions are seen only with high doses. The signs of toxicity are associated with the inhibition of cholinesterase.

"Dow ET-57" (0, 0 dimethyl-0-2, 5-trichlorophenyl phosphorothioate) produces depression, pronounced muscular weakness, incoordination and prostration usually accompanied by scouring. These signs appear within 24 hours of exposure and may continue for several weeks. At high dosages, some salivation and dysponea may be seen 5–8 days after exposure.

Cholinesterase determinations are of little significance. Animals may have severe symptoms whilst the blood cholinesterase is high and also zero readings without any signs of poisoning.

In acute poisoning the lesions are not outstanding and they may be absent. When present they consist of haemorrhages of varying sizes and position on the heart, lungs or gastrointestinal tract The lungs may be congested and are often oedematous and heavy. Frothy exudate may be present in the bronchi and trachea. If the animal is affected over a prolonged period pneumonia may be observed. The lungs of several animals which breathed as if they had pneumonia were free from lesions at P.M. examination.—D. POYNTER.

LALICH, J. J., BARNETT, B. D. & BIRD, H. R. (1957). **Toxicity of beta-aminopropionitrile for turkey poults.**—*Fed. Proc.* **16**, 363. **2800**

From results of feeding experiments it is concluded that turkeys are more susceptible than rats to β-aminopropionitrile (the toxic principle of *Lathyrus odoratus* seeds).

—T.E.G.R.

EYSSEN, H., DE SOMMER, P. & VAN DIJCK, P. (1957). **Further studies on antibiotic toxicity in guinea pigs.**—*Antibiot. & Chemother.* **7**, 55-64. [Spanish summary p. 95.] **2801**

Since penicillin, chlortetracycline, bacitracin and streptomycin produce the same lethal toxic syndrome when given orally to g. pigs, the authors were forced to conclude that this is probably due to substantial changes produced by these antibiotics on the intestinal flora.

—G. P. MARSHALL.

I. SAUTTER, J. H. & HOYT, H. H. (1957). **Sulfonamide intoxication in a steer.** — *J. Amer. vet. med. Ass.* **130,** 18-20. **2802**

II. SAUTTER, J. H. & STOWE, C. M. (1957). **Sulfonamide intoxication experimentally produced in a heifer.**—*Ibid.* 20-22. **2803**

I. A 350-lb Aberdeen-Angus steer died after receiving 480 grains of sulphadiazine daily for four days as a treatment for a respiratory infection. The lesions, suggestive of sulphonamide poisoning, are described. The main damage appeared to have resulted from mechanical blockage of the kidney by crystals of sulphonamide.

II. 250 grains sodium sulphaquinoxaline given to a 250-lb heifer daily for four days was toxic. Pathological changes in the kidney are described.—S. BRIAN KENDALL.

NEWBERNE, P. M. & BUCK, W. B. (1956). **Studies on drug toxicity in chicks. II. The influence of various levels of sulfaquinoxaline on growth and development of chicks.**—*Poult. Sci.* **35,** 1259-1264. **2804**

The authors state that sulphaquinoxaline given to young chicks in the food for 6 weeks at concentrations of 0·025%, 0·05% and 0·1% caused minor symptoms and a slight decrease in food consumption. There were moderate changes in the blood picture and other pathological changes. No muscular or subcutaneous haemorrhages were observed. [Tabulated data indicate that the average weight of chicks receiving 0·05% sulphaquinoxaline in the food exceeded that of chicks receiving unmedicated food, yet in the text it is stated that this conc. of the drug caused some decrease in weight gains.]—S. BRIAN KENDALL.

JACKSON, J. H. (1957). **Tissue changes in alimentary canal of mouse induced by ricin poisoning.**—*J. Physiol.* **135,** No. 2. pp. 30P-31P of Proceedings. **2805**

When large quantities of ricin are introduced into the alimentary canal of a mouse, marked changes are produced in the gut wall particularly of the small intestine. These include haemorrhages in the villi, oedema of the subepithelial tissue and degradation of the epithelium. There results an increased permeability which permits the toxin to reach the blood stream in spite of the fact that it is a non-diffusible protein with a very large molecule. However, about 25,000 times the intraperitoneal lethal dose must be given by mouth in order to produce death.—J. A. NICHOLSON.

OLIVER, W. T. & ROE, C. K. (1957). **Rotenone poisoning of swine.**—*J. Amer. vet. med. Ass.* **130,** 410-411. [Authors' summary copied *verbatim.*] **2806**

In swine, rotenone produced a rapidly fatal poisoning characterized by paralytic symptoms and an absence of marked pathological changes.

THOMPSON, S. W., JR. (1957). **Toxicity of various enzymes when inoculated intracerebrally into mice.**—*Cornell Vet.* **47,** 326-334. [Author's summary modified.] **2807**

Lysozyme, pancreatic desoxyribonuclease, "Protease 15", and streptokinase-streptodornase, were relatively non-toxic for mice. Trypsin, "Rhozyme P-11", Protease" (trypsin), and "Proteinase A", were toxic for mice when inoculated in high concentrations. Bromelain, ficin, chymotrypsin, and papain, were extremely toxic for mice even in very low concentrations.

See also absts. **2867** (report, Australia); **2868** (report, New Zealand).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease).

MONTEMAGNO, F. (1956). Prime osservazioni cliniche ed indagini biologiche sull'impiego della nuova terapie con metacortandracin in medicina veterinaria. **[Delta[1]—dehydrocortone (prednisone) therapy in veterinary medicine.]**—*Acta med. vet., Napoli* **2,** 3-15. [English, French, German and Spanish summaries.] **2808**

The drug was used with success in a daily dosage of 2·5–5 mg. in 3 dogs with muscular rheumatism or chronic eczema. Several blood constants in these cases, before and after treatment, were investigated.—G. P. MARSHALL.

KOGER, R. B. (1957). **Clinical evaluation of prednisone-penicillin combination.** — *Vet. Med.* **52,** 188-190. **2809**

"Meticillin", a preparation containing 10 mg. of prednisone (Δ^1-dehydrocortone) and 0·3 megaunit of procaine penicillin G per ml., was used in a large variety of medical and surgical conditions in small animals (mostly dogs) (total: 283 cases) in a dosage of 1 ml. per 25 lb. body wt. and was considered to be "one of the most effective single agents" in practically all of them. About 10% of the animals had an acute urticarial reaction, 10 min. after deep i/m

injection, which could be controlled by an antihistamine.—G. P. MARSHALL.

HINES, L. R. (1956). **An appraisal of the effects of long-term chlortetracycline administration.** — *Antibiot. & Chemother.* **6,** 623-641. [Spanish summary p. 671.] **2810**

A review (150 references, two thirds of them of veterinary interest) of reports concerning the prolonged oral use of chlortetracycline in man and in domestic and laboratory animals produced no evidence that the dose levels at present recommended are harmful.—G. P. MARSHALL.

RIPPS, J. H. (1957). **Hexetidine: a new chemotherapeutic agent for topical use.**—*Vet. Med.* **52,** 296-297. [Author's summary modified.] **2811**

Hexetidine [bis-1, 3-beta-ethylhexyl-5 methyl-5 amino hexahydropyrimidine], a new synthetic agent with broad spectrum, anti-bacterial and antifungal properties as well as activity against certain parasites (particularly trichomonads), is discussed. It is believed that this product will prove useful, particularly as topical ointment, for a variety of bacterial and fungal conditions.

THOMAS, J. A. & HANNOU, C. (1957). Action bactéricide et virulicide du glyoxal. [**Bactericidal and viricidal action of glyoxal.**] — *C. R. Acad. Sci., Paris* **244,** 2258-2261. **2812**

The bacterial action of glyoxal on staphylococci was equal to that of formaldehyde *in vitro*. Its action on influenza virus was ten times greater than that of formaldehyde. [See also *V.B.* **27,** 2591].—R.M.

DICKINSON, L. & THOMPSON, M. J. (1957). **The antiviral action of *threo*-β-phenylserine.** — *Brit. J. Pharmacol.* **12,** 66-73. [With an appendix by J. S. Nicholson, pp. 72-73.] [Authors' summary copied *verbatim.*] **2813**

L-*threo*-phenylserine and esters of *threo*-phenylserine were the most active of a series of compounds tested against influenza A virus in tissue culture. Substitution of the β-OH or α-NH_2 group abolished activity. The activity of phenylserine was reversed competitively by phenylalanine. Phenylserine did not act on free virus or on the adsorption of virus to host cells. It prevented virus growth if added during the first half of the latent period. Phenylalanine appears to be necessary for virus synthesis and can be supplied by phenylalanylglycine or glycylphenylalanine. Phenylserine had no significant activity against ectromelia infections in mice, even when the amino acid content of the livers had been depleted by starvation.

REITMEIER, M. (1956). Das Blutbild der Katze nach intraperitonealer Verabreichung von Thiogenal. [**Blood picture in cats after intraperitoneal administration of "Thiogenal" (methitural).**]—*Inaug. Diss., Munich* pp. 37. **2814**

In 17 experiments in a number of cats before and 15 min. after i/p administration of 75-100 mg. of methitural, R. found that the drug produced no significant changes in the number of r.b.c. and in Hb values, but did cause a reduction in the number of w.b.c. and variable changes in their differential count, more substantial changes occurring later, maximally at 6 hours after injection. He concluded that, in spite of these changes, the drug is suitable for anaesthetizing recalcitrant cats for the purpose of blood tests, provided that the sample is taken as soon as the animal becomes manageable.

—G. P. MARSHALL.

See also absts. **2577-2579** (treatment of mastitis); **2582** (effect of quaternary ammonium compounds on anthrax spores); **2585-2586** (streptovaricin); **2587** (TB.); **2612** (aureomycin against S. pullorum infection); **2613** (furazolidone against S. pullorum infection); **2614** (menadione); **2626** (sensitivity of Cl. haemolyticum to antibiotics); **2633** (chloramphenicol in foot rot of cattle); **2635** prednisone and prednisolone); **2638** (ringworm); **2652** (trypanocidal compound "528"); **2659** ("entramin"); **2660-2661** (nicarbazin); **2665-2666** (chlortetracycline in anaplasmosis); **2670** (toxoplasmosis); **2682** (influenza); **2720-2722 & 2726-2728** (insecticides); **2725** (dips); **2731-2732, 2736, 2743, 2745 & 2748-2749** (anthelmintics); **2800-2804** (poisoning with therapeutic substances).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

DENTON, D. A. (1957). **The effect of variations in blood supply on the secretion rate and composition of parotid saliva in Na^+-depleted sheep.**—*J. Physiol.* **135,** 227-244. **2815**

In order to obtain information regarding the change in the Na^+/K^+ ratio of parotid saliva during Na^+ depletion, alteration of the blood supply to the parotid glands was made by the provision of bilateral carotid loops in two sheep. A carotid sinus reflex was shown to be present. It was also found that Na^+ depletion caused a fall in systemic blood pressure, but division of the carotid sinus or cervical sympathetic nerve or removal of the superior cervical ganglion had no influence on the response of the parotid gland to Na^+ depletion. It is concluded that a local factor is involved in the change in saliva Na^+/K^+ ratio which occurs during Na^+ depletion in sheep.

—J. A. NICHOLSON.

WASE, A. W. & YU SHENG LOUISE FENG. (1956). **Sialoadenectomy and the metabolism of calcium-45 in bone and soft tissues of the mouse.**—*Nature, Lond.* **178,** 1229-1230. **2816**

The influence of removal of the salivary glands on the metabolism of calcium and strontium was studied in groups of 10 adult male mice. Radioactive isotopes Ca^{45} and Sr^{90} were given intraperitoneally and two hours after injection the incorporation of isotopes into bone and most soft tissues was found to be greater in sialoadenectomized animals than in controls. Conventional chemical estimation of calcium in diet, faeces and urine over a 3-day peroid indicated a corresponding negative calcium balance in animals without salivary glands. It is suggested that sialoadenectomy results in a general mineral depletion, attributable to deficient alimentary absorption, and that these effects may be associated with hypothalamo-hypophyseal function or with thyroid function.

—R. J. FITZPATRICK.

CARLSON, L. A. & FRIBERG, I. (1957). **The distribution of cadmium in blood after repeated exposure.**—*Scand. J. clin. Lab. Invest.* **9,** 67-70. [In English. Authors' summary modified.] **2817**

The distribution of cadmium in the blood was studied in rabbits given s/c injections of Cd^{115}. More than 90% was in the erythrocytes. Zone electrophoresis of haemolysate showed quantitative migration of cadmium with the haemoglobin.

HACKETT, P. L., GAYLOR, D. W. & BUSTAD, L. K. (1957). **Blood constituents in Suffolk ewes and lambs.**—*Amer. J. vet. Res.* **18,** 338-341. [Authors' summary slightly modified.] **2818**

Values for some of the haematological and blood chemical constituents of purebred Suffolk ewes and lambs are summarized. Trends and variations observed during a four-year study are also reported.

PATERSON, J. Y. F. (1957). **17-hydroxycorticosteroids and leucocytes in the blood of dairy cattle.**—*J. comp. Path.* **67,** 165-179. [Author's conclusions modified.] **2819**

Blood samples were taken from 22 dairy cows for 10 weeks before and after parturition. The mean concentrations of 17-hydroxycorticosteroids were higher before parturition, the highest being found 1–2 weeks prepartum. There were marked decreases at parturition. Leucocyte and neutrophile counts showed significant increases 1–2 weeks prepartum, with sharp decreases at about parturition. There was a significant eosinopenia 1–2 weeks prepartum. Changes in lymphocytes were not significant.

SJOLIN, K. -S. (1957). **Coagulation defect in horse plasma.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 818-820. [Author's summary modified.] **2820**

The delayed thrombin generation in samples of horse plasma was made normal by (1) addition of normal human plasma, or (2) addition of reabsorbed heated human serum, or (3) addition of washed human or horse platelets, or (4) freezing of the horse plasma with its normal content of platelets. These results indicated that the clotting defect was caused by lack of a factor similar to the Hageman factor. Blood platelets, after washing or freezing, apparently substituted for this lacking factor. The coagulation defects in horse plasma apparently reflect various types of haemophilioid deficiencies.

MARGOLIS, G., GRIFFIN, A. T., KENAN, P. D., TINDALL, G., LAUGHLIN, E. H. & WOOD, R. (1957). **Circulatory dynamics of the canine spinal cord.**—*Fed. Proc.* **16,** 365. **2821**

The rate of circulation through the spinal cord and the effects produced by postural changes were investigated. Sodium fluorescein, as indicator, was injected intra-arterially and the vascular network of the pia mater was viewed under ultra-violet light. It is concluded that the cord is not intrinsically susceptible to injury by contrast media, and that the postural factor is related to gravitational influences, increasing the concentration of the heavy contrast agents to a critical level.—T.E.G.R.

CROSS, B. A. & SILVER, I. A. (1956). **Milk ejection and mammary engorgement.**—*Proc. R. Soc. Med.* **49,** 978-979. **2822**

The stimulus of suckling excites the hypothalamo-hypophyseal system to release oxytocin into the circulation with consequent expression of milk due to contraction of the mammary myoepithelial cells. This reflex may be modified by various factors, central and peripheral, including vasoconstriction of mammary blood vessels. Twenty-four hours after ligature of teat ducts in puerperal rats the mammary gland is engorged with milk and vascular congestion is produced. At 48 hours after ligation, however, the capillary bed is fully constricted and intravenous oxytocin no longer evokes milk ejection because circulating oxytocin cannot reach the myoepithelial cells. This vasoconstriction, which is capillary and not arteriolar,

is not due to passive occlusion by high intramammary pressure and is not relieved by sympatholytic drugs. It is suggested that the vasoconstriction is due to an active substance in retained milk.—R. J. FITZPATRICK.

HADFIELD, G. (1957). **The nature and origin of the mammotrophic agent present in human female urine.** — *Lancet* **272,** 1058-1061. [Author's general conclusions slightly modified.] **2823**

Experimental evidence is produced supporting the conclusion that human female urine contains pituitary prolactin at concentrations varying from 0·01 to 0·25 i.u. per ml. It is suggested that an estimation of urinary prolactin may materially assist in the selection of those patients with metastatic breast cancer who are likely to benefit from hypophysectomy. It is also suggested that, for the bio-assay of prolactin in human urine, potent urinary extracts (which can be preserved indefinitely) should be injected into hypophysectomized male weanling mice of the Strong A_2G strain.

GRAZER, F. M. & CLEMENTE, C. D. (1957). **Developing blood brain barrier to trypan blue.**—*Proc. Soc. exp. Biol., N.Y.* **94,** 758-760. [Authors' summary slightly modified.] **2824**

Trypanblue injected into developing rat embryos (10 days to birth) failed to stain the central nervous system. This impermeability in the developing c.n.s exists at the time when blood vessels invade the brain. It cannot be assumed, however, that the mechanisms which prevent protein-bound dyes from penetrating the cerebral blood vessels are the same for all other substances.

GREENSTEIN, J. S. & FOLEY, R. C. (1957). **The incidence of extramedullary myelopoiesis in bovine adrenal glands.**—*J. Anim. Sci.* **16,** 341-348. **2825**

Extramedullary myelopoiesis was observed in 24 of 105 animals and involved any or all of the zones of the cortex, the areas varying in shape and size from gland to gland. It is considered that the condition is not associated with pregnancy or fertility though age may play a part since older cattle are more commonly affected. The possibility of genetic causes merits further investigation.—T.E.G.R.

CHRISTIANSON, M. & JONES, I. C. (1957). **The interrelationships of the adrenal glands of mother and foetus in the rat.**—*J. Endocrin.* **15,** 17-42. [Abst. from authors' summary.] **2826**

It was concluded that enlargement of the foetal adrenal gland after adrenalectomy of the mother rat was due to activity of the foetal pituitary. There was no evidence that either normally or under special circumstances the foetal adrenal gland secreted hormones which influenced water and salt-electrolyte metabolism. The sodium content of foetal plasma followed fairly closely that of maternal plasma. The foetal plasma potassium content (which was about twice that of the adult), the foetal muscle sodium content (which was about 8 times that of the adult) and foetal muscle potassium content (which was similar to that of the mother) did not vary greatly, nor seem to be conditioned hormonally. The presence of foetuses in adrenalectomized mothers did not alter the salt-electrolyte changes usually occurring in cortical insufficiency. While progesterone had a beneficial effect on appetite and body weight in adrenalectomized animals, it tended to produce an increased potassium content of muscle but did not change the salt-electrolyte content of plasma; the nature of its action is not clear.

SWANSON, E. W., LENGEMANN, F. W. & MONROE, R. A. (1957). **Factors affecting the thyroid uptake of I^{131} in dairy cows.**—*J. Anim. Sci.* **16,** 318-327. **2827**

In a study of dairy cows during 18 months it was observed that the uptake of I^{131} by the thyroid reached a maximum of about 18% of the dose 3–5 days after administration and after 6 days it was released at a constant rate of about 3% per day. Thyroid activity reached a maximum in the first few weeks after parturition and later it was the same in dry cows on the same feed. Iodine in amounts usually included in dairy rations markedly inhibited uptake of I^{131} and a low-iodine grain ration also caused some inhibition.—T.E.G.R.

BRUCE, H. M. & SLOVITER, H. A. (1957). **Effect of destruction of thyroid tissue by radioactive iodine on reproduction in mice.**—*J. Endocrin.* **15,** 72-82. [Authors' summary modified.] **2828**

Destruction of the thyroid tissue in male mice had no effect on fertility. In the females fertility and litter frequency were unaffected, but the oestrous cycle was prolonged and 46% of gestations were longer than normal.

There was also a tendency towards small litters. Lactation, as judged by the weight of the offspring at weaning, was not affected. After weaning the growth rate of offspring of either sex from both thyroid-deficient and normal mothers was the same. Although

the pituitary glands were enlarged in all the thyroid-deficient animals examined, tumours were not observed.

SMITH, V. R., STOTT, G. H. & WALKER, C. W. (1957). **Observations on parathyroidectomized goats.**—*J. Anim. Sci.* **16,** 312-317. [Authors' summary modified.] **2829**

Thyroparathyroidectomy in kids and in mature goats caused a marked drop in the serum Ca but no marked change in the plasma inorganic P. A low Ca ration caused a further decrease in the serum Ca of kids. Four of six thyroparathyroidectomized kids died from parathyroid deficiency. Pregnant goats developed tetany within a week after removal of the parathyroids. After parturition no further symptoms of parathyroid deficiency were observed. Lactation in the thyroparathyroidectomized goats was inhibited.

NISBET, A. M. (1956). **Arterio-venous anastomoses in the teat of a cow.**—*Nature, Lond.* **178,** 1477. **2830**

N. describes in histological terms, the occurrence of arteriovenous anastomoses in the tip of the teat of the cow. Their function is discussed in relation to the local control of circulation and especially to the erection of the teat.

—R. J. FITZPATRICK.

See also absts. **2872** (haematological atlas); **2874** (book, physiology of farm animals).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

Contributors: ALBERTSEN, V. E., BENOIT, R., BLOM, T., CROFT, P. G., DOLMAN, C. E., DRIEUX, H., HOOD, R. I., HOUTHUIS, M. J. J., JEPSEN, A., JOHANSEN, H. H., KAPLAN, M. M., KOCH, S. O., SCARAFONI, G. S., SCHMID, G., SCHÖNBERG, F. & THORNTON, H. (1957). **Meat hygiene. W.H.O.** Monograph Series No. 33. pp. 527. 50s. **2831**

A WHO/FAO Seminar on Meat Hygiene was held in Copenhagen in February 1954, and this monograph comprises the contributions and discussions at the Seminar and brings together the opinions of acknowledged experts on the public health aspects of the processes involved in the preparation, processing and marketing of meat and meat foods.

The monograph is divided into seven parts, comprising Epidemiology, Ante-mortem care, Slaughter, Post-mortem inspection, Processing and marketing of meat, Training of meat inspection personnel, and Meat hygiene practices in Europe and tropical areas. There are sixteen annexes dealing with such matters as regulations for the transport of animals, the design of abattoirs, isolation and identification of pathogenic bacteria in cases of food poisoning, and bacteriological examination of manufactured meat products.

It is pointed out that meat hygiene is essentially a public health function but has important secondary aims in the economic sphere in that it can ensure reduction of losses in meat and by-products and can also prevent the transmission of disease to other domestic animals. Effective operation of a meat hygiene service must be based upon close working relationships between medical, veterinary and sanitary engineering authorities, and although no standard or uniform pattern exists for a meat hygiene service it is pointed out that some health authorities have found it advantageous to include a Veterinary Public Health Branch in their service to cover meat hygiene needs as well as other responsibilities, *e.g.* diseases transmissible from animals to man.—H. THORNTON.

OLIVANT, J. N. (1957). **An introduction to laboratory methods in veterinary food control.** pp. 32. Liverpool: The Author. [Copies can be obtained from the University of Liverpool, Department of Veterinary Pathology, 42-44 Bedford St. North, Liverpool, 7.] **2832**

In many European countries technical methods are in common use for laboratory examination of fresh meat and meat products, these aids being chiefly of a biochemical and bacteriological nature and complementary to inspection by the meat inspector. The author describes the techniques for the measurement of the pH of meat, the estimation of the degree of bleeding of a carcass, and the methods used in Denmark and Germany for bacteriological examination of carcasses and organs. The taking of samples, bacterial media employed, the identification of positive cultures and the interpretation of the bacteriological findings are described.

The author discusses the biochemical and bacteriological tests which may be applied to raw sausage and minced meat, canned hams and canned fish and to other cooked and preserved foods. The examination of animal fats for rancidity, adulteration, the presence of carotene and of bile pigments are also described.

The author points out that it is beyond the scope of his contribution to describe every type

of laboratory aid of value in veterinary food control, but expresses the hope that the summary of information will serve as an introduction to the subject for veterinary students and help to supplement their further studies.

—H. THORNTON.

HOWARD, A. & LAWRIE, R. A. (1956). **Studies on beef quality. Parts I-III.**—*Tech. Pap. Div. Food Pres. Trans. No.* 2., *C.S.I.R.O. Aust.* pp. 72. [Authors' summary modified.] **2833**

I. Paired beef quarters from 18 carcasses were used to compare the relative effects on palatability and on "drip" during thawing of blast-freezing without previous chilling and of chilling and freezing in the normal manner. The blast-frozen beef was significantly less palatable and less tender than the chilled and frozen beef. It proved impossible to blast-freeze beef quarters at a sufficiently high rate to freeze them before the onset of rigor mortis and thus there was no excessive drip on thawing.

II. Neither fasting nor enforced exercise alone depleted muscle glycogen reserves sufficiently to raise the ultimate pH of the musculature above normal values, although both together appeared to do so. Severe hypermagnesaemia slowed down, and severe hypercalcaemia accelerated, the onset of rigor mortis. Insulin-induced convulsions virtually depleted muscle glycogen reserves.

In certain steers depletion of glycogen reserves from the muscles was attributed provisionally to an inherent "excitability". This was not influenced by the administration of thyroxine, thyroid extract, methylthiouracil or adrenaline before slaughter.

III. Data on the weight losses from carcasses during freezing and holding in frozen storage, thawing as quarters and holding as butchers' cuts, and on the criteria of eating quality before and after storage were examined to determine the influence of a number of preslaughter treatments. The injection of a massive dose of insulin produced a carcass with pH approximating that *in vivo* and the meat gave low values for laboratory drip, but the eating quality was seriously affected. Indications were obtained that treatments which delayed removal of adenosine triphosphate also affected moisture losses and eating quality. Meat which had been chilled for a short period at low temp. was superior to stored frozen meat in juiciness and flavour. This was interpreted as an effect of storage rather than of freezing.

I. HAMDY, M. K., KUNKLE, L. E. & DEATHERAGE, F. E. (1957). **Bruised tissue. II. Determination of the age of a bruise.**—*J. Anim. Sci.* **16**, 490-495. **2834**

II. HAMDY, M. K., KUNKLE, L. E., RHEINS, M. S. & DEATHERAGE, F. E. (1957). **Bruised tissue. III. Some factors affecting experimental bruises.**—*Ibid.* 496-501. **2835**

I. Bruised tissues of different duration were subjected to a colour test and a conductivity test. In the colour test, based on the presence of bilirubin in the bruise, the tissue was immersed for 10–20 min. at room temp. in Fouche's reagent (25 g. trichloracetic acid, 10 ml. of 10% ferric chloride and 100 ml. distilled water). Colour changes indicated the amount of bilirubin (which varied with the age of the bruise). A significant difference in conductivity between normal and bruised tissue was observed.

II. It was observed that the gross lesions and chemical changes associated with the healing of bruised tissue were consistent, regardless of species or site of the bruise. Healing was significantly more rapid in younger animals and in animals that had sustained previous bruises. Healing was also accelerated by transfusion with blood from bruised animals.

—T.E.G.R.

SAVI, P. (1956). Elettroforesi su carta del siero di latte normale e di latte trattato con calore a diverse temperature. **[Paper electrophoresis of the whey of normal and of heated milk.]** —*Arch. Vet. Ital.* **7**, 401-409. [English, French, German and Spanish summaries.] **2836**

At temperatures above 65°C. the proteins underwent progressive changes resulting in the disappearance of globulins at about 75°C. and in a diminution and gradual denaturation of the albumin fractions at temperatures above 85°C.

—T.E.G.R.

See also absts. **2628** (dangers of bone meal to human and animal health); **2711** (psittacosis in man in Italy); **2739** (trichinosis).

REPRODUCTION AND REPRODUCTIVE DISORDERS

BRONSCH, K. & LEIDL, W. (1957). Experimentelle Untersuchungen an Bullen über die Ausscheidung von P^{32} im Sperma. **[Experimental studies in bulls on excretion of radioactive phosphate in semen.]**—*Zbl. VetMed.* **4**, 175-184. [English, French and Spanish summaries. English summary modified.] **2837**

In each of 8 trials in 6 bulls the excretion

of P^{32} in ejaculates after a single oral or i/m dose was determined. The maximum rate of excretion occurred between the 15th and 19th day after oral administration and on the 14th day after i/m administration. The radioactivity was only in the seminal plasma and not in the spermatozoa. In order to clarify the factors associated with the delayed assimilation of P^{32} its concentration in the faeces and blood was determined and, 21 days after oral administration, also in the brain, lungs, liver, kidney, muscles, testes and seminal vesicles.

PRABHU, S. S. (1956). **Influence of factors affecting sex-drive on semen production of buffaloes. II.**—*Indian J. vet. Sci.* **26,** 21-33. **2838**

In buffalo bulls, reaction time was significantly shortened and percentage of abnormal spermatozoa in second ejaculate increased when the routine teaser was replaced by a male buffalo. Exposing bulls to a cold shower before collection increased initial motility of spermatozoa. The percentage of abnormal spermatozoa increased when dark-coloured females were used, and concentration of spermatozoa in first ejaculate was higher at night. Morning collections did not yield better results than evening collections.—R. N. MOHAN.

I. KOK, J. C. N. (1957). Enquete naar de verdunningsvloeistoffen voor stierensperma gebruikt bij de kunstmatige inseminatie van runderen in Nederland. [**Inquiry into bull semen diluents used for artificial insemination of cattle in the Netherlands.**] — *Tijdschr. Diergeneesk.* **82,** 187-193. [English, French and German summaries.] **2839**

II. VAN DIETEN, S. W. J. (1957). Een vergelijking van een citraat-verdunningsmiddel t.o.v. een fosfaat-verdunningsmiddel voor stierensperma. [**Comparison of a citrate diluent and a phosphate diluent for bull semen.**—*Ibid.* 194-199. [English, French and German summaries. Absts. from English summaries.] **2840**

I. The inquiry covered ¾ of the artificially inseminated livestock, amounting to over a million first inseminations in two years. It is considered that a diluent with citrate as buffer and an osmotic value equivalent to a freezing point depression (Δ) of −0·51°C. and a pH of 6·7 is better than a phoshate diluent with Δ of −0·44°C. and pH 7. Both diluents are used in the Netherlands. The concentration of egg yolk is not important, provided that it is not higher than 33% or lower than 15%.

II. Both diluents contained 33⅓% egg yolk; the pH was 6·8 ± 0·1. The osmotic value of the phosphate–egg yolk medium was equivalent to a freezing point depression (Δ) of −0·431°C., and that of the citrate–egg yolk diluent was −0·579°C. According to Kok, the optimal conditions for the survival of spermatozoa are Δ −0·55° ± 0·03°C. Ejaculates of 14 bulls were used on a split sample base for 7,101 inseminations. The difference in conception rate between the diluents was highly significant in favour of the citrate–egg yolk diluent. The suboptimal osmotic value and the interaction between phosphate ions and egg yolk—revealing itself in a dense flocculate — are regarded as causing the poorer results of the phosphate–egg yolk medium.

KRISHNA RAO, C. (1956). **Studies on the differential staining of live and dead sperm.** —*Indian vet. J.* **33,** 180-188. **2841**

R. recorded results obtained with several dyes in background staining and differential staining of live and dead spermatozoa in cattle and buffalo semen.—R. N. MOHAN.

KRISHNA RAO, C. (1957). **Use of clearing agents in staining semen smears.**—*Amer. J. vet. Res.* **18,** 441-444. [Abst. from author's summary.] **2842**

The 13 clearing agents tested could be used successfully in conjunction with basic stains to bring about simultaneous clearing and staining of smears with excellent results. In view of the interaction between the stain and the clearing agent, mixtures of the two have to be prepared fresh each time and cannot be stored. Clearing of semen smears did not materially increase the depth of staining of spermatozoa when acid stains were used.

KRISHNA RAO, C. (1957). **The utility of certain Romanowsky stains for staining semen smears.**—*Vet. Rec.* **69,** 603-605. [Author's summary modified.] **2843**

Leishman's stain, 150 mg. per 100 ml. of solvent, was considered satisfactory; ethyl alcohol was an adequate substitute for methyl alcohol as a solvent; clearing of smears was generally necessary. Wright's stain gave the same general type of staining; 300 mg. of stain per 100 ml. of solvent was considered satisfactory; ethyl alcohol was slightly inferior to methyl alcohol as a solvent. With Giemsa's stain (300 mg. per 100 ml of solvent) results were satisfactory but inferior to those with the other two stains; ethyl alcohol was an adequate substitute for methyl alcohol as a solvent.

KRISHNA RAO, C. (1957). **Studies on certain factors affecting live and dead differential sperm staining.**—*Vet. Rec.* **69**, 544-547. [Author's summary modified.] **2844**

Studies were made on several factors controlling the proportion of stained and unstained spermatozoa in preparations with the live and dead differential stains described earlier by the author. The suitability of various red stains for incorporation in those differential stains was studied. Of the fluorescein group eosin B, erythrosin B, erythrosin A, eosin Y, and mercurochrome proved satisfactory for this purpose in decreasing order of efficiency. Acid fuchsin was also very good. All of these stains proved satisfactory at a conc. of 1%.

Egg-yolk-diluted semen gave a higher percentage of live spermatozoa than plain semen. Varying the dilution rate from 1 : 1 to 1 : 25 with egg yolk did not materially alter the proportion of stained to unstained spermatozoa, neither did changing the ratio of stain to semen from 1 : 10 to 1 : 20. A period of staining from 10 to 30 sec. was found to be optimum for bull and buffalo semen.

BISHOP, M. W. H. & SMILES, J. (1957). **Differentiation between living and dead spermatozoa by fluorescence microscopy.**—*Nature, Lond.* **179**, 308. **2845**

Primulin, in a concentration of about 1 : 30,000 at pH 7·2–8·2, can be used to distinguish living from dead spermatozoa. When the suspension is examined with ultra-violet dark-ground illumination, dead spermatozoa fluoresce light blue, living ones remaining invisible. All spermatozoa can be readily seen as dark-ground images when a neutral filter is substituted for the ultra-violet filter. Satisfactory results have been obtained with a variety of animals including the boar, bull and man, but not with the rabbit and sea-urchin.—J. A. NICHOLSON.

HLOUŠEK, A. (1956). Zjišťování pathologických tvarů spermií býka fázově kontrastním mikroskopem. [**Phase-contrast microscopy of pathological forms of bull spermatozoa.**] —*Sborn. vys. Šk. zemědělsk. les. Fac., Brno, Ser. B.* **4 (25)**, 177-186. [In Czech. German and Russian summaries.] **2846**

H. described some structural abnormalities in bull spermatozoa as demonstrated by phase-contrast microscopy. The advantages of this method is that staining is unnecessary. The merits of some staining methods were discussed. —E.G.

MANN, T. & WHITE, I. G. (1957). **Glycerol metabolism by spermatozoa.**—*Biochem. J.* **65**, 634-639. [Authors' summary slightly modified.] **2847**

Ram spermatozoa, separated from seminal plasma by centrifuging and washing, metabolize glycerol aerobically to lactic acid. The yield of lactic acid is higher in the presence of phosphate owing to an inhibitory effect of phosphate on the oxidation of lactic acid by spermatozoa. Dihydroxyacetone is oxidized by spermatozoa as rapidly as glycerol, giving rise to lactic acid. Phosphoglycerol (both α– and β–) increases the respiration of spermatozoa. This is due to the oxidation of glycerol set free from phosphoglycerol by dephosphorylation. Glycerylphosphorylcholine, which is a natural constituent of ram semen, is neither dephosphorylated nor oxidized by spermatozoa. Apart from glycerol, a number of alcohols and related substances were tested for their effect on respiration. One of them, sorbitol, is oxidized rapidly by spermatozoa to fructose, which is then broken down to lactic acid.

EMMENS, C. W. & MARTIN, I. (1957). **The fertility of bull semen deep-frozen by two different techniques.**—*Aust. vet. J.* **33**, 63-67. **2848**

Results from controlled, balanced tests of frozen semen showed no impairment of fertility as compared with chilled semen. Semen equilibrated for 18 hours before freezing was significantly more fertile than semen frozen as soon as possible (30–50 min.) after the addition of glycerol and sugar. Although the number of spermatozoa surviving freezing and also the fertility were less in the non-equilibrated than in the equilibrated semen, the greater convenience of the former method may justify its use under some conditions.—A. W. BLACKSHAW.

DUTT, R. H. & HAMM, P. T. (1957). **Effect of exposure to high environmental temperature and shearing on semen production of rams in winter.**—*J. Anim. Sci.* **16**, 328-334. **2849**

Two shorn and two unshorn rams were placed in a room at 90°F. and relative humidity 60–65% for one week in January. A third pair was kept as control. The increase in body temperature was markedly higher in the unshorn rams; the pulse rate increased in the shorn but was not appreciably affected in the unshorn rams; respiration rate was markedly increased in both groups, being higher in the unshorn. There was little effect on the semen volume but motility of spermatozoa was markedly affected, especially in the unshorn rams in which it was lowest during the 5th week after treatment. Abnormal spermatozoa increased in both groups,

especially in the unshorn in the 5th week after treatment. The number of spermatozoa decreased more appreciably in the unshorn lambs. Semen quality of all the test rams was normal after 8 weeks.—T.E.G.R.

ROY, A. (1957). **Egg yolk-coagulating enzyme in the semen and Cowper's gland of the goat.** —*Nature, Lond.* **179,** 318-319. **2850**

The extinction of spermatozoal life in diluted goat semen after 3 days at 3°C. in glycine – egg yolk or egg yolk – citrate was always preceded by coagulation of the diluents. The coagulation was shown to be due to an enzyme present in the secretion from Cowper's gland which acts specifically on egg yolk. Extracts of Cowper's glands from sheep or castrated goats were without effect.—J. A. NICHOLSON.

CHANG, M. C. (1957). **A detrimental effect of seminal plasma on the fertilizing capacity of sperm.**—*Nature, Lond.* **179,** 258-259. **2851**

Rabbit spermatozoa develop a capacity to fertilize only after spending about 6 hours in the uterus or Fallopian tubes. This capacity can be abolished by treatment with seminal plasma, the spermatozoa being apparently unable to penetrate the zona pellucida. It can be restored by a further stay in the female genital tract. The substance in seminal plasma affecting the fertilizing capacity of spermatozoa is thought to be similar to that which is harmful to fertilized ova. Seminal plasma, as a medium for artificial insemination, is beneficial to both motility and fertility: it is only after the spermatozoa have been in the female tract that it is detrimental both to motility and fertilizing capacity.

—J. A. NICHOLSON.

BAKER, F. N., CRAGLE, R. G., SALISBURY, G. W. & VANDEMARK, N. L. (1957). **Spermatozoon velocities in vitro. A simple method of measurement.**—*Fertil. & Steril.* **8,** 149-155. [Authors' summary slightly modified.] **2852**

The method used was based on the principle that the number of free-swimming cells passing in a given time through a segment of a plane is dependent on the dimensions of the segment, the concentration of the cells in suspension, and the velocity of the cells. The mean velocity observed in 15 samples of bovine semen was 4·23 mm. per min. [See also *V.B.* **26**, 1434.]—R.M.

PAŘÍZEK, J. (1957). **The destructive effect of cadmium ion on testicular tissue and its prevention by zinc.**—*J. Endocrin.* **15,** 56-63. [Author's summary modified.] **2853**

S/c administration of cadmium salts (cadmium chloride or lactate) to male rats and mice leads to acute destruction of the testicles, with destruction of the seminiferous epithelium and interstitial tissue. These changes in turn evoke castration phenomena, but the atrophied accessory sex organs retain the ability to react to testosterone propionate. Within 20 days after the injection of cadmium, proliferation of fibroblasts in the interstitial spaces under the albuginea begins and is accompanied by the extensive formation of new blood vessels. Later, new Leydig cells appear; this is followed by a gradual return of the endocrine function of the testicles. The spermatogenic epithelium of the seminiferous tubules, on the other hand, does not regenerate even 133 days after the injection of cadmium. Simultaneous administration of a large dose of zinc salts protects the testicles completely.

SINCLAIR, A. N. (1957). **Effect of variation of time of mating, mating frequency and semen dose rate on conception in Merino sheep.**—*Aust. vet. J.* **33,** 88-91. **2854**

A lambing percentage of 55–65% may be expected from Merino ewes after artificial insemination. Conception rates were not affected by the stage of oestrus at which insemination was performed. The volume of semen inseminated, within the range of 0·1 to 0·4 ml., did not influence conception rates.—A. W. BLACKSHAW.

FRAZER, J. F. D. & GLENISTER, T. W. (1957). **Factors affecting the motility of toad spermatozoa, and their application in a rapid test for pregnancy.**—*J. Physiol.* **135,** No. 2. pp. 49P-50P of Proceedings. **2855**

Isotonic solutions containing gonadotrophin or human pregnancy urine were the only agents found to activate spermatozoa from the common toad *Bufo bufo*. A rapid test for pregnancy can, therefore, be carried out by diluting human urine 1 in 5 and 1 in 10 with distilled water with pH 5–6. A small piece of toad testis is placed in two drops of the diluted urine and examined immediately under the microscope for motility among the freed spermatozoa.

—J. A. NICHOLSON.

SHORT, R. V. (1957). **Steroids related to progesterone in the human and mare placenta.** —*J. Endocrin.* **15,** pp. i-ii of Proceedings. [Abst. from author's summary.] **2856**

During the study of progesterone in the placentae of domestic animals [see *V.B.* **27,** 1290], a substance was detected in the 'ketonic fraction' of mare placental extracts, with an

ultra-violet absorption maximum at 240 mμ. This substance was identified as 20β–hydroxy-pregn-4en-3one.

DAVIES, J. L. & DUN, R. B. (1957). **A note on the fertility of ewes treated with multiple injections of progesterone followed by pregnant mare serum.**—*Aust. vet. J.* **33**, 92-94. **2857**

In a small trial 34 of 36 Merino ewes were brought into almost simultaneous oestrus by a series of injections of progesterone followed by pregnant mare serum as described by Robinson [*V.B.* **26**, 3308]. However, after insemination 30 ewes returned to service within 14–20 days. This infertility was ascribed to an abnormally long interval between the onset of oestrus and ovulation.—A. W. BLACKSHAW.

STORY, C. D., CHENG, E. W., PAULS, J. & HALE, W. H. (1957). **Estrogenic activity of feces and urine following oral administration of diethylstilbestrol to lambs.**—*J. Anim. Sci.* **16**, 307-311. [Authors' summary modified.] **2858**

Four lambs were fed two different levels of stilboestrol. When 1 mg. was given daily, 51% of the stilboestrol appeared in the faeces and 25% in the urine. With 2 mg. daily, 45% appeared in the faeces and 39% in the urine. The possible fate of the remaining 20% is discussed briefly.

TRIMBERGER, G. W. (1956). **Ovarian functions, intervals between estrus, and conception rates in dairy cattle.**—*J. Dairy Sci.* **39**, 448-455. **2859**

400 post-partum cows during 5 years in one herd of Friesian and Channel Island cows were studied. 200 cases were studied by repeated rectal examination, 200 were left as untreated controls. Persistent corpus luteum (as distinguished from suboestrus) was claimed to affect 30%, both in served and unserved animals: the contrary results obtained by Chapman & Casida (1934) [*Proc. Amer. Soc. Anim. Prod.* **57**,] and by Olds & Seath (1951) [*J. Dairy Sci.* **34**, 626] are attributed to insufficient breadth of study [the broadly-based study by Stewart (1952)—*V.B.* **23**, 2125—confirming these is not mentioned]. Suboestrus incidence, 12% up to 60 days *post partum*, progressively decreased later. 70% of cows showed heats 18–25 days apart, with "mode" at 21–22 days.

—F. L. M. DAWSON.

SIMON, J. & MCNUTT, S. H. (1957). **Histopathological alterations of the bovine uterus. II. Uterine tissue from cows of low fertility.** —*Amer. J. vet. Res.* **18**, 241-245. [Authors' summary modified.] **2860**

The endometrium of 200 cows that had failed to conceive to at least 4 services did not differ greatly from that of apparently normal virgin heifers; in most cases, no true differences could be detected. Endometritis was not a major cause of return to service in these cows. The study provided no indications as to the mechanism of embryonic death.

SZÉKY, A. & DÓZSA, L. (1956). Feststellung der Unfruchtbarkeitsursachen bei Kühen mit Hilfe des bioptischen Verfahrens. **[Determination of the causes of sterility in cows by biopsy.]**—*Acta vet., hung.* **6**, 259-286. [In German. Russian summary.] **2861**

The authors presented a detailed account of histological and gross findings in the ovaries and uterus of slaughter cattle. Details were given of examination by uterine biopsy, using a special instrument [see *V.B.* **27**, 1287] and clinical methods in a group of 68 cows with various genital affections. Changes in the uterine mucosa connected with phases of the oestrous cycle were also studied from biopsy material. The value of uterine biopsy as a supplementary aid in the determination of causes of sterility was discussed. There are 34 photomicrographs of endometrial tissue changes.

—E.G.

CALKINS, E., KAHN, D. & DINER, W. C. (1956). **Idiopathic familial osteoporosis in dogs: "Osteogenesis imperfecta".** — *Ann. N.Y. Acad. Sci.* **64**, 410-423. **2862**

A condition similar to osteogenesis imperfecta of man was observed in 3 litters comprising 25 puppies of which 13 were affected. The clinical manifestations, which are not specific, included deformities and brittleness of the bones resulting in fractures which however healed rapidly (even though the dog continued to walk) without the development of pseudoarthroses. The deformities included flattening of the extremities of the limbs, outward bowing of the elbows, and knock knees. Symptoms appeared at 6–8 weeks of age, except in one which was stunted at birth, and began to disappear at 6 months. Clinical analyses of the blood, urine and bones were made. Histological examination of the bones revealed retarded bone formation.—T.E.G.R.

See also absts. **2602** (E. coli orchitis in goats); **2645** (mycotic abortion); **2689** (Wesselsbron virus associated with ovine abortion).

ZOOTECHNY

NOOR AHMAD & LANG, W. R. (1957). **Orthopara cortical differentiation in "anomalous" Merino wool.**—*Aust. J. biol. Sci.* **10,** 118-124. **2863**

A number of "anomalous" or "doggy" fleeces with coarse crimp and shiny staples occur in otherwise typical Merino flocks. Fibres from 31 "doggy" fleeces were somewhat coarser than those from 17 normal fleeces. They showed characteristics of cortical segmentation normally seen only in much coarser-wooled breeds, and had a higher proportion of paracortex in cross-section than the normal Merino fibres.

—M. H. HARDY.

BRÖNSTRUP, K. -H. (1957). Der Einfluss der Transportverhältnisse auf die Fleischqualität von Schlachtschweinen. (Ein Beitrag zur Frage der Ruhezeit vor der Schlachtung). **[Influence of transport conditions on the quality of pig meat.]**—*Zbl. VetMed.* **4,** 151-174. [English, French and Spanish summaries. English summary modified.] **2864**

Fatigue before loading and unfavourable transport conditions often produce serious changes in carbohydrate metabolism and circulatory disorders among pigs imported from Denmark into Germany. Results are insufficient acid production and ripening, incomplete bleeding, poor keeping quality, rapid bacterial growth, early decomposition and an unpleasant taste. When the metabolic changes are not severe, rest for 12 hours will correct them. Circulatory disorders can be corrected only partially, and only after at least 24 hours' rest.

Metabolic and circulatory disorders which are too severe to be repaired by rest alone respond to a diet rich in carbohydrate during the rest period. Transport conditions must be improved. The authorities should insist on proper accommodation in the boats and should regulate the numbers of animals carried according to space available.

BEATTIE, W. A. (1956). **A survey of the beef-cattle industry of Australia.** — *Bull. C.S.I.R.O. Aust.* No. 278. pp. 135. [Author's summary modified.] **2865**

This survey, carried out in 1946–52, gives an over-all picture of the Australian beef-cattle industry, its growth and its problems. In 1954, two-thirds of the beef cattle were in Queensland, the Northern Territory, and the Kimberley district of northern Western Australia. The general statistics of the industry are summarized before detailed studies of these three regions and their subdivisions are discussed.

Water supplies for stock, irrigation, vegetation, animal husbandry, the common diseases and pests which influence production, the density and main breeds of cattle, and the general structure of, and management within, the industry are discussed. B. emphasizes that transport is the key to development of the industry in the north and favours railways as the most satisfactory means for moving stock over long distances.

In Southern Australia, except for one or two properties, all the regions are in the temperate zone, and except for a small area in New South Wales, are below the cattle-tick line and the line of enzootic pleuropneumonia, important factors for movement of cattle. The potential for comparatively short-term increases in output of beef are greater than in the north. Cattle are usually complementary to sheep raising or some other form of land use.

The southern States are examined in turn for combinations of beef with dairy cattle, sheep (in areas of different rainfall) and cereal growing. Animal husbandry, diseases and pests, distribution of breeds and a study of the structure and management of the industry are also discussed.

The general position of the industry as a whole is outlined. Over the last decade there has been a downward trend in the Kimberleys, an upward trend in the Northern Territory, a gradual increase in basic numbers and a very great increase in turn-off in Queensland, and an appreciable increase in the southern States.

Conclusions are drawn as to what is required to place the industry on a firm foundation, and recommendations are made for research into specific plant and animal problems. An appendix gives details of a random sample of 10 properties which graze both cattle and sheep.

MISCELLANEOUS

SEN'KIN, M. M. (1956). **[Nephrectomy in cattle.]** — *Trud. novocherkassk. zoo.-vet. Inst.* **9,** 197-201. [In Russian.] **2866**

S. reported 4 experimental unilateral nephrectomies in cattle aged 7–9 months, performed under local anaesthesia. He recommended the operation for pyelonephritis, abscesses and tumours.—R.M.

REPORTS

WESTERN AUSTRALIA. (1956). **Annual report of the Department of Agriculture for the year ended 30th June, 1955.** [WYATT, W. H.] Perth: W. H. Wyatt. [Items of veterinary interest pp. 15-18, 38-39, 49.] **2867**

During the year 339 dairy herds containing 19,168 cattle were tuberculin tested. The overall incidence of infection was 1·15%; 257 herds were free from infection. SWINE ERYSIPELAS was diagnosed for the first time in Western Australia in a specimen from an abattoir. SWINE PARATYPHOID has been more prevalent than usual. The compulsory testing for PULLORUM DISEASE of all flocks supplying eggs to commercial hatcheries became operative in January 1955. 119,304 birds in 76 flocks were tested and positive reactors (0·35%) destroyed. A limited survey indicates that ovine BRUCELLOSIS (EPIDIDYMITIS) is no less prevalent than in eastern parts of Australia. ENTEROTOXAEMIA has been common in non-immunized flocks as a result of seasonal conditions favouring its incidence. ACTINOBACILLOSIS in sheep was diagnosed for the first time. Further progress has been made in the eradication of FOOT ROT; 78 flocks were freed from infection and 123 were in quarantine at the end of the year.

EPHEMERAL FEVER (THREE-DAY FEVER) in cattle was reported from a number of stations in the Kimberleys. MYXOMATOSIS has given good control in rabbits in some regions, *Culex annulirostris* being the main vector.

Epidemiological studies of sheep and cattle nematodes carried out in co-operation with the Commonwealth Scientific and Industrial Research Organization have provided a sound basis for control measures.

LEUCOSIS has become the most important disease in poultry.

Investigations of PHOSPHORUS DEFICIENCY in dairy cows, of copper and cobalt metabolism of animals and of siliceous URINARY CALCULI in sheep are proceeding. Studies of the oestrogenic potency of subterranean clover, have been continued. VITAMIN K DEFICIENCY was diagnosed in poultry.

The following plants were incriminated as causes of stock mortality:—*Stypandra imbricata, Velleia discophora, Solanum laciniatum, Gastrolobium bennettsianum, Raphanus raphanistrum* and *Acacia dilatata* (suspected of causing HCN poisoning). Investigation of LUPINOSIS has been concerned chiefly with an endeavour to reproduce the disease in sheep with a diet of seeds of *Lupinus varius*: results have been negative. It has been shown conclusively that *Crotalaria retusa* causes KIMBERLEY HORSE DISEASE and the final report of the botanical aspects of the investigation has been prepared for publication. A comprehensive work on "The Toxic Plants of Western Australia" has been published [*V.B.* **26,** 4006.]—H. W. BENNETTS.

NEW ZEALAND. (1956). **Animal Research Division of the New Zealand Department of Agriculture. Annual Report for 1955-1956.** [FILMER, J. F.] pp. 39. Wellington: R. E. Owen, Govt. Printer. **2868**

The diagnostic service has grown from 23,943 specimens examined in 1953 to 46,523 in 1955.

At Ruakura hill station work was continued on the possible inheritance of VAGINAL PROLAPSE in ewes. A breeding flock has been maintained for further work on the anatomy and physiology of the disease. Research was also done on various problems related to sheep farming. Amongst others, an intensive study of the characters of ovine brucella strains in New Zealand and Australia, led to these organisms being finally classified as *Brucella ovis*.

Several cases of ENZOOTIC ICTERUS were encountered in the King Country. The farms all have large quantities of ragwort, *Senecio jacoboea*. The livers of affected sheep all showed typical lesions of ragwort poisoning.

Cattle breeding projects included the performance testing of Aberdeen Angus Bulls; crossbred Aberdeen×Jersey beef production; and cattle nutrition problems.

The complement-fixation test in the diagnosis of JOHNE'S DISEASE was further studied but it could not be considered 100% reliable. Vaccination experiments have been carried out with the object of conferring immunity on young calves by vaccination of the dam.

There is a list of 73 papers published by members of the staff.—D. R. RABAGLIATI.

BOOK REVIEWS

HARE, R. [Professor of Bacteriology in the University of London and Honorary Consulting Bacteriologist to St. Thomas's Hospital.] (1956). **An outline of bacteriology and immunity.** pp. ix+418. London (New York & Toronto): Longmans, Green & Co. 35s. **2869**

This is a text-book written for medical

students and based on lectures given by the author at a London medical school. It is potentiated towards the requirements of a general practitioner.

The detail usually devoted to the isolation and identification of different bacterial pathogens has been reduced and the descriptions of systematic and diagnostic bacteriology are placed in a distinct and separate section.

A clear description is given of the type of information required by a pathology laboratory when biological specimens are submitted, together with details of the correct methods for collecting and dispatching samples.

The author deals with the subjects of virology, mycology, immunity and epidemiology more fully than is usual in student text-books of this general nature, and affords them equal status with those chapters on bacteriology.

An interesting and informative chapter deals with the source and manner of spread of pathogens in endemic and epidemic infections.

The book will be of interest to those concerned with veterinary science who require a concise outline of medical bacteriology, virology and mycology. Although there is a useful table giving the various vertebrate hosts whose organisms may produce infection in man, this aspect is not dealt with in detail.

Little mention is made of the part played by veterinary services in protecting man from such serious infections as glanders, rabies and tuberculosis.—A. E. Pierce.

Smith, H. C. (1957). **Infectious diseases of swine.** pp. 96. Kansas City: Veterinary Medicine Publishing Co. **2870**

This booklet reviews the American literature on the principal infectious diseases of pigs: swine fever, erysipelas, influenza, pox; leptospira, brucella and listeria infections; enteritis, encephalitis and transmissible gastro-enteritis. It is a reprinting of a series of articles which appeared in *Veterinary Medicine* between June 1955 and September 1956.—R.M.

Horton-Smith, C. [Edited by.] (1957). **Biological aspects of the transmission of disease.** pp. viii+184. Edinburgh (& London): Oliver & Boyd. [Published for the Institute of Biology.] 21s. **2871**

This collection of papers was presented at a symposium of the Institute of Biology. In addition to the full texts of 22 papers, there are 30 pages which report the discussions at the meeting. There are subject and author indexes.

As indicated in an editorial note, the object of the Institute of Biology is to break down the professional and specialist barriers that hinder the dissemination of knowledge and exchange of views among workers in allied biological fields. The symposium included contributions from botanists, zoologists and medical and veterinary scientists. Papers by workers in the veterinary field included those by R. Lovell (Bacteria of veterinary importance and their transmission by non-biological agencies); C. Horton-Smith (Factors affecting the transmission of coccidia and the development of disease in fowls); E. L. Taylor (The transmission of helminths of veterinary importance); and W. I. B. Beveridge (Properties of some infective agents in relation to their modes of transmission).

The book represents a useful collection of authoritative data in various fields and in some instances ("A high degree of infectiousness and a high degree of resistance are, to some extent at least, incompatible") stimulating lines of thought emerged. It seems unfortunate, therefore, that, apart from a brief introductory note, there is no attempt to underline any central theme or to draw any general conclusions.

—S. Brian Kendall.

Nikitin, V. N. (1956). **[Haematological atlas of farm and laboratory animals.]** Vol. I. pp. 258. Vol. II. 191 plates. Moscow. Gosud. izd. sel'skokhoz. lit. 95 r. [In Russian.] **2872**

This is the first full-scale atlas of veterinary haematology to be produced, and is an excellent work. It embraces all species of domesticated mammals and birds, and laboratory animals (including the frog). There are two volumes (page size 9"×12"), the first a text and the second, the atlas proper, being a collection of 191 coloured plates. The text begins with an account of haematological techniques and then gives data for the various morphological, physical and biochemical properties of blood and blood-forming organs in each animal. There is a discussion of the origin of blood cells (based on the work of A. A. Maximov) and the embryonal development of blood and blood-forming organs. The remaining half of the book describes physiological and pathological variations and changes; there are separate paragraphs for each of the principal bacterial, virus, protozoal and helminth diseases. As a review of the literature, it is a guide to a great volume of Russian literature, very little of which is known outside Russia. At the same time there is the serious defect of entirely omitting [illegible] work done outside Russia, resulting in an unbalanced and incomplete picture of the subject; not even Wirth's "Klinische Hämatologie der Haustiere" is mentioned. This failing is well seen in the scanty

information about blood groups. A smaller defect of the first volume is the absence of a subject index.

The atlas proper comprises a splendid collection of coloured plates on glossy paper, depicting drawings from smears of blood or bone marrow. For the normal morphology of blood cells, each species of animal is allocated about 4 of these large plates. The remaining 130 plates depict pathological states, *i.e.*, abnormal blood cells, or the blood picture in various diseases; 24 plates demonstrate blood protozoa. While the printing of most of the plates is of high quality, the colours have been blurred on a few of them. The mode of presentation of the book is very good and at the United Kingdom price of 75s. it is very good value. Those wishing to use the atlas who do not know Russian could obtain a list of translated captions of the coloured plates on application to the editor of *Veterinary Bulletin,* Weybridge.—R.M.

FRAUCHIGER, E. & FANKHAUSER, R. (1957). Vergleichende Neuropathologie des Menschen und der Tiere. **[Comparative neuropathology of man and animals.]** pp. viii+451. Berlin (Göttingen & Heidelberg): Springer Verlag. DM 126.60. **2873**

This excellent survey of comparative pathology is enhanced by much material from the authors' own experience, including some 300 original photographs and photomicrographs. After a few introductory chapters (including a history of the subject) there are twelve chapters, having the following headings:– Hereditary diseases and malformations; Metabolic disorders; Inflammatory diseases; Pathological changes in abnormal functional states; The peripheral nervous system; Muscular diseases; Neurovegetative disturbances; Vascular processes and plexus pathology; Tumours; Traumatic damage; Pathology of the vertebrae and vertebral canal; Behaviour of the nervous system in poisoning. The most extensive chapter is that on inflammatory diseases: it includes a list of 62 inflammatory conditions of the central nervous system in animals, presented in tabular form with different columns for species affected, biological features, pathological anatomy, and occurrence in human beings.

As a survey of the literature, coverage appears to be wide and up to date. References for each chapter are placed at the end of the book, (unfortunately in a way which does not facilitate rapid reference). Paper of high quality has been used, which presents the many illustrations with great clarity, as well as providing a clear text. Pathologists will find this book informative, stimulating, and valuable for reference.—R.M.

HAMMOND, J. [Edited by.] (1957). **Progress in the physiology of farm animals. Volume 3.** pp. 741-1043. London: Butterworths Scientific Publications. 50s. **2874**

This is the third and final volume of this series dealing with the applied physiology of domestic animals, the purpose of the publication being to make available information which may assist in the drive for increased animal production. The third volume follows the pattern of the other two in that its ten chapters have each been written by different authors. The index for the three volumes is included in this volume.

The subjects considered are reproduction and milk production. It would appear from a publisher's note that a chapter on male fertility is still in course of preparation.

Reproduction is dealt with under the headings reproductive hormones, female fertility and pregnancy; and whilst the subject is adequately dealt with on general lines, the species differences do not receive the attention they deserve. Milk production is considered under the headings mammary development and lactation, factors affecting the rate of secretion of milk and lactation yields, and factors affecting the composition of milk. The recent advances in knowledge concerning the mechanism of milk secretion and their application to milk production are well developed and this section more nearly fulfils the objects for which these volumes have been produced than any of the other sections. To those who are interested in the physiology of domestic animals, these volumes will prove to be of much interest and they may be recommended as a worthwhile contribution to the literature on the physiology of the higher mammals.—J. A. NICHOLSON.

BOOKS RECEIVED

[Inclusion of recently received books in this list does not preclude review.]

FISHER, R. A. & YATES, F. (1957). **Statistical tables for biological, agricultural and medical research.** pp. x+138. Edinburgh (& London): Oliver & Boyd. 5th Edit. revised and enlarged. 24s.

HOOGSTRAAL, H. (1956). **African Ixodoidea. I. Ticks of the Sudan. (With special reference to Equatoria Province and with preliminary reviews of the genera *Boophilus*, *Margaropus*, and *Hyalomma*.)** pp. 1101. Cairo: U.S. Naval Medical Research Unit No. 3. [Research Report NM 005 050.29.07.]

IRVINE, K. N. (1957). **BCG and vole vaccination. A practical handbook.** pp. 103. London: National Association for the Prevention of Tuberculosis. 2nd Edit. 15s.

KRÜGER, W. (1957). Tilgung der Rindertuberkulose, Ergebnisse und Erfahrungen für die Sanierung von Rinderbeständen. **[Eradication of bovine tuberculosis; results and experience with infected herds with special reference to East Germany.]** pp. ix + 184. Jena: Gustav Fischer Verlag. DM 11.

RICE, V. A., ANDREWS, F. N., WARWICK, E. J. & LEGATES, J. E. (1957). **Breeding and improvement of farm animals.** pp. x + 537. New York (Toronto & London): McGraw-Hill Book Company, Inc. 5th Edit. 64s.

STAMM, G. W. (1957). **Veterinary guide for farmers.** pp. 384. Chicago: Windsor Press.

THORNTON, H. (1957). **Text-book of meat inspection. Including the inspection of rabbits and poultry.** pp. viii + 592. London: Baillière, Tindall & Cox. 3rd Edit. 60s.

The Editor will be glad to receive publications relating to Veterinary Science and cognate subjects in order that they may be dealt with in the *Veterinary Bulletin*.

Reports of Departments, Special Reports, reprints, etc., etc., should be sent as soon as they are issued.

Books for Review.

The Editor will be glad to receive books for review in the *Veterinary Bulletin*.

Bulletins on disease subjects written for farmers and "popular" articles of a similar nature are not included in the *Veterinary Bulletin*. Those of a sufficiently important nature are, however, included in *Index Veterinarius;* so also are certain review articles, presidential addresses, congress proceedings, etc., where the title conveys as much information as could be given in an abstract of a few lines. For information of this nature, readers of the *Veterinary Bulletin* are referred to *Index Veterinarius,* where titles of all publications indexed by the bureau are fully cross-referenced.

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